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Tier-I Examination

25-SOLVED PAPERS

(2016–2019)

SECTIONS COVERAGE

1. General Intelligence & Reasoning	3. Quantitative Aptitude
2. General Awareness	4. English Language

2500 Questions with Answers and Detailed Explanations

Sanjeev Joon

SSC CGL

Tier-I Examination

25-SOLVED PAPERS

(2016–2019)

Sanjeev Joon

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by Sanjeev Joon

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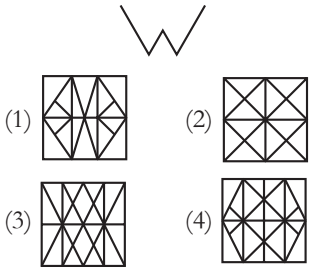
SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 06 June, 2019 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. Select the option in which the given figure is embedded.



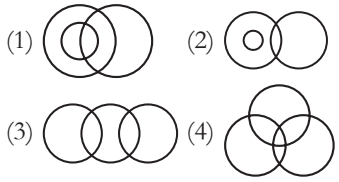
2. Arrange the following words in a logical and meaningful order:
1. Student
2. Job
3. Interview
4. Education
5. Retirement
6. Degree

(1) 1, 5, 3, 6, 4, 2
(2) 1, 4, 6, 3, 2, 5
(3) 5, 3, 2, 1, 4, 6
(4) 3, 5, 4, 6, 1, 2

3. From the given options, select the word pair whose two words are related to each other in the same way as the words of the word pair given below are related.
Sadness : Excitement
(1) War : Attack
(2) Treaty : Friendship
(3) Enrollment : Employment
(4) Condemnation : Respect

4. Two mixtures contain milk and juice in the ratio of 2 : 1 and 4 : 5. If equal volumes of the two mixtures are mixed together, what would be ratio of milk to juice in the resulting mixture?
(1) 7 : 5 (2) 1 : 1
(3) 5 : 3 (4) 5 : 4

5. Select the Venn diagram that best illustrates the relationship between the following classes.
Snakes, Reptiles, Poisonous



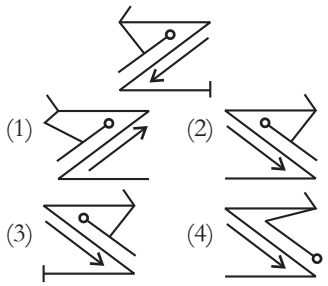
6. Three of the following four numbers are alike in a certain way and one is different. Pick the number that is different from the rest.
(1) 338 (2) 217
(3) 28 (4) 65

7. Select the combination of letters that when sequentially placed in the gaps of the given letter series will complete the series.
bac_cab_cd_a_ac_ca
(1) bdabc (2) dcbac
(3) cadbc (4) dacbd

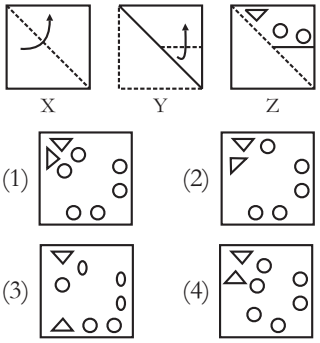
8. Which two signs should be interchanged in the following equation to make it correct?
10 + 5 ÷ 10 × 8 – 10 = 16
(1) + and ÷ (2) – and +
(3) ÷ and × (4) × and +

9. Three of the following four words are alike in a certain way and one is different. Pick the odd word out.
(1) Krishna (2) Mahanadi
(3) Tapti (4) Godavari

10. Select the correct mirror image of the given figure when the mirror is placed to the right of the figure.

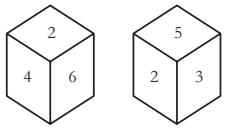


11. The sequence of folding a piece of square paper (figure X and Y) and the manner in which the folder paper has been cut (figure Z) as shown. How will the paper appear when unfolded?



12. In a code language, COMPUTER is written as OCREPMTU. How will DAUGHTER be written in the same language?
(1) READTHGU
(2) ADTHREGU
(3) ADREGUTH
(4) ADERUGTH

13. Two different position of the same dice are shown. Which number will be at the top if 4 is at the bottom?



(1) 3 (2) 6
(3) 5 (4) 1

14. Raja's mother said to Raja, "My mother has a son whose son is Deepak. How is Deepak related to Raja?
(1) Uncle (2) Cousin
(3) Brother (4) Nephew

15. Two statements are given followed by three conclusions numbered I, II and III. Assuming the statement to be true even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statement.

Statements:
No crow is a bird.
All bird are animals.

Conclusions:
I. Some animals are crows.
II. Some animals are birds.
III. No animal is a crow.
(1) Only conclusions I and III follow
(2) None of the conclusions follows
(3) Only conclusion III follows
(4) Conclusion II and either conclusion I or III follows

16. If CAB is coded as 6 and BED is coded as 40, then how will HAD be coded as?
(1) 16 (2) 52
(3) 32 (4) 46

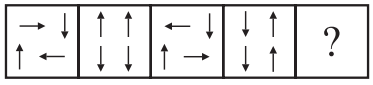
17. Select the set in which the number are related in the same way as are the numbers of the following set.
(5, 13, 12)
(1) (13, 17, 11) (2) (11, 15, 9)
(3) (15, 19, 13) (4) (6, 10, 8)

18. Three of the following four letter-clusters are alike in a certain way and one different. Pick the odd one out.
(1) RQST (2) FGHJ
(3) MLNO (4) CBDE

19. 'Cinema' is related to 'Audience' in the same way as 'Church' is related to '.....'.
(1) Congregation
(2) Meditation
(3) Concentration
(4) Prayer

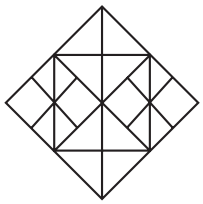
20. Select the number-pair in which the two numbers are related in the same way as are the two numbers of the following number-pair.
7 : 32
(1) 3 : 11 (2) 13 : 98
(3) 12 : 85 (4) 16 : 145

21. Select the figure that will come next in the following figure series.



(1) 
(2) 
(3) 
(4) 

22. How many squares are there in the following figure?



(1) 12 (2) 18
(3) 16 (4) 14

23. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.
MNOP : LONQ : : FGHI : ?
(1) GFIJ (2) EGHJ
(3) DHGK (4) EHGJ

24. Select the set in which the numbers are related in the same way as are the numbers of the following set
(8, 12, 24)
(1) (6, 9, 18) (2) (12, 20, 40)
(3) (6, 10, 18) (4) (9, 18, 27)

25. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
98, 95, 86, 82, 66, ?, 36
(1) 58 (2) 60
(3) 61 (4) 63

PART-II
(GENERAL AWARENESS)

26. Which Indian received the Nobel Peace Prize after Mother Teresa?
(1) K Radhakrishnan
(2) Fali Nariman
(3) P Sathasivam
(4) Kailash Satyarthi

27. Which of the following metals is the most reactive metal?
(1) Copper (2) Calcium
(3) Iron (4) Zinc

28. International Day of Forests 2019 was observed on 21st March with the theme ..... to raise awareness on how sustainably managed forests provide a wide array of contributions.
(1) Pollution-free Forests
(2) Forests and Education
(3) Forests and Environment
(4) Forests Our savior

29. Which of the following metals is the most ductile metal?
(1) Tin (2) Gold
(3) Copper (4) Aluminium

30. Right to move freely throughout the territory of India is a fundamental right under ..... of the Constitution of India.
(1) Article 24 (2) Article 21
(3) Article 14 (4) Article 19

31. Which of the following comes under the Quaternary sector?
(1) Information Technology
(2) Mining
(3) Manufacturing
(4) Fisheries

32. The colourful art named Nandna block print, which uses graceful yet aligned arrangements of motifs on fabric, is practiced in Tarapur Village of ..... .
(1) Uttarakhand
(2) Madhya Pradesh
(3) Odisha
(4) Maharashtra

33. Who was awarded the Rabindranath Tagore Literary Prize 2019 for the Novel 'Solo'?

(1) Nayanjyot Mukherjee
(2) Rana Dasgupta
(3) Amitabh Ghosh
(4) Jhumpa Lahiri

34. ....., which connects Sikkim with Tibet, was closed after the Chinese aggression on India in 1962 but was reopened in 2006 as the governments of the two countries decided to enhance their trade through land routes.
(1) Imis La (2) Pensi La
(3) Lanak La (4) Nathu La

35. Who among the following was a slave of Muhammad Ghori? He became the ruler after the death of his master and founded the Slave Dynasty.
(1) Ghiyas-ud-din Balban
(2) Iltutmish
(3) Nasir-ud-din Mahmud
(4) Qutab-ud-din Aibak

36. Name the Indian Space Research Organization (ISRO) chairman and Padma Bhushan Award who created and unleashed a historical moment when Mars Orbiter became the first Indian spacecraft to enter Martian orbit in a maiden attempt.
(1) Sundar Pichai
(2) K Radhakrishnan
(3) Fali Nariman
(4) Nandan Nilekani

37. Which is the longest national highway in India?
(1) National Highway 48
(2) National Highway 44
(3) National Highway 53
(4) National Highway 27

38. Lok Adalat have been created under ..... .
(1) Legal Services Authority Act
(2) Administration of Justice Act
(3) Arbitration and Conciliation Act
(4) Legal Conciliation Act

39. Which was the first Muslim dynasty that ruled India?
(1) Slave dynasty
(2) Tughlaq dynasty
(3) Lodhi dynasty
(4) Khilji dynasty

40. Which of the following ministries implemented the Midday Meal Scheme?
(1) Ministry of Social Justice and Empowerment
(2) Ministry of Home Affairs
(3) Ministry of Human Resource Development
(4) Ministry of Social Welfare

41. World ..... Day 2019 was observed on 22nd March with the theme 'Leaving no one behind' to focus on marginalized groups.
(1) Environment
(2) Forest
(3) Water
(4) Petroleum

42. In February 2019, ... won a gold medal at the Makran Cup in Chabahar, Iran.
(1) Manish Kaushik
(2) Deepak Singh
(3) Rohit Tokas
(4) Satish Kumar

43. In February 2019, India won ..... gold medal/s and five silver medals at the Makran Cup Boxing in Chabahar, Iran.
(1) Two (2) Three
(3) Four (4) One

44. The Badami Chalukyas first had their capital at ..... before they moved it to Badami.
(1) Pattadakal (2) Aihole
(3) Hubli (4) Bijapur

45. What is deposited on iron in the process of galvanization?
(1) Copper (2) Zinc
(3) Tin (4) Aluminium

46. The popular Bagh cave paintings are found in ..... .
(1) Madhya Pradesh
(2) Himachal Pradesh
(3) Sikkim
(4) Odisha

47. Where is the Bandipur National Park located?
(1) Karnataka (2) Kerala
(3) Gujarat (4) Sikkim

48. ..... was the first Muslim ruler whose empire covered almost the whole of India up to its extreme south.
(1) Allaudin Khilji
(2) Jalal-ud-din Khilji
(3) Ghiyas-ud-din Balban
(4) Firoz Shah Tughlaq

49. Who founded and named the science of electromagnetism?
(1) Michael Faraday
(2) James Clerk
(3) Hanswer Christian Oersted
(4) Andre Marie Ampere

50. Which of the following destroys the ozone layer?
(1) Sulphur (2) Carbon
(3) Chlorine (4) Silicon

PART-III
(QUANTITATIVE APTITUDE)

51. The table shows the production of different types of cars by a company (in thousands) in 5 years.

Car / Year	A	B	C	D	E
2014	52	54	48	46	64
2015	47	45	53	50	45
2016	48	47	56	54	65
2017	43	50	57	67	63
2018	38	40	54	68	70

What is the ratio of the total production of type C cars in 2015 and type D cars in 2017 taken together to the total production of type B cars in 2016 and type A cars in 2017 taken together?
(1) 12 : 11 (2) 13 : 10
(3) 11 : 9 (4) 4 : 3

52. A and B are travelling towards each other from the points P and Q respectively. After crossing each other, A and B take $6\frac{1}{8}$ hours and 8 hours respectively to reach their destinations Q and P. If the speed

of B is 16.8 km/h, then the speed (in km/h) of A is:
(1) 20.8 (2) 19.8
(3) 19.2 (4) 20.4

53. If $12\cot^2\theta - 31\operatorname{cosec}\theta + 32 = 0$, $0° < \theta < 90°$, then values of $\tan\theta$ will be:
(1) $\frac{4}{3}, \frac{3\sqrt{7}}{7}$ (2) $\frac{4}{5}, \frac{5\sqrt{7}}{7}$
(3) $\frac{5}{4}, \frac{4}{3}$ (4) $\frac{4}{5}, \frac{4}{3}$

54. ABCD is a trapezium in which AB || DC and its diagonals intersect at P. If AP = $(3x - 1)$ cm, PC = $(5x - 3)$ cm, BP $(2x + 1)$ cm and PD = $(6x - 5)$ cm, then the length of DB is:
(1) 14 cm (2) 12 cm
(3) 10 cm (4) 16 cm

55. The value of $\sqrt{\sec^2\theta + \operatorname{cosec}^2\theta} \times \sqrt{\tan^2\theta + \sin^2\theta}$ is equal to:
(1) $\operatorname{cosec}\theta \sec^2\theta$
(2) $\sin\theta \sec^2\theta$
(3) $\sin\theta \cos^2\theta$
(4) $\operatorname{cosec}\theta \cos^2\theta$

56. The volume of a metallic cylindrical pipe is 7480 cm^3. If its length is 1.4 m and its external radius is 9 cm, then its thickness (given $\pi = \frac{22}{7}$) is:
(1) 1 cm (2) 0.8 cm
(3) 0.9 cm (4) 1.2 cm

57. If $x = a + \frac{1}{a}$ and $y = a - \frac{1}{a}$ then $\sqrt{x^4 + y^4 - 2x^2y^2}$ is equal to :
(1) $16a^2$ (2) 8
(3) $\frac{8}{a^2}$ (4) 4

58. G is the centroid of the triangle ABC, where AB, BC and CA are 7 cm, 24 cm and 25 cm respectively, then BG is:
(1) $6\frac{1}{3}$ cm (2) $8\frac{1}{3}$ cm
(3) $5\frac{1}{2}$ cm (4) $4\frac{1}{6}$ cm

59. The table shows the production of different types of cars by a company (in thousand) in 5 years.

Car / Year	A	B	C	D	E
2014	52	54	48	46	64
2015	47	45	53	50	45
2016	48	47	56	54	65
2017	43	50	57	67	63
2018	38	40	54	68	70

The total production of type B cars in all the five years is what percent more than the total production of type A, B and D cars in 2017?
(1) 49.5 (2) 4.5
(3) 57.3 (4) 32.2

60. The table shows the production of different types of cars by a company (in thousands) in 5 years.

Car / Year	A	B	C	D	E
2014	52	54	48	46	64
2015	47	45	53	50	45
2016	48	47	56	54	65
2017	43	50	57	67	63
2018	38	40	54	68	70

The average production of type D cars in 5 years is what percent less than the production of type E cars in 2018? (Correct to one decimal place)
(1) 18.6 (2) 16.8
(3) 15.9 (4) 17.4

61. When x is subtracted from each of 21, 22, 60 and 64, the number so obtained in this order, are in proportion. What is the mean proportional between $(x + 1)$ and $(7x + 8)$?
(1) 27 (2) 18
(3) 24 (4) 21

62. The table shows the production of different types of cars by a company (in thousands) in 5 years.

Car / Year	A	B	C	D	E
2014	52	54	48	46	64
2015	47	45	53	50	45
2016	48	47	56	54	65
2017	43	50	57	67	63
2018	38	40	54	68	70

If the data related to the production of cars in 2018 is represented by pie chart, then the central angle of the sector representing the production of type C cars will be:
(1) 72° (2) 59°
(3) 93° (4) 91°

63. ABCD is a cyclic quadrilateral whose diagonals intersect at P. If AB = BC, $\angle DBC = 70°$ and $\angle BAC = 30°$, then the measure of $\angle PCD$ is:
(1) 35° (2) 50°
(3) 55° (4) 30°

64. Pipes A and B can fill a tank in one hour and two hours respectively while pipe C can empty the filled tank in one hour and fifteen minutes. A and C are turned on together at 9 a.m. After 2 hours, only A is closed and B is turned on. When will the tank be emptied?
(1) 12 : 10 p.m. (2) 11 : 30 a.m.
(3) 10 : 30 a.m. (4) 12 : 20 p.m.

65. If the 8-digit number $2074 \times 4y2$ is divisible by 88, then the value of $(4x + 3y)$ is:
(1) 49 (2) 36
(3) 42 (4) 45

66. If $(8x^3 - 27y^3) \div (2x - 3y) = (Ax^2 + Bxy + Cy^2)$, then the value of $(2A + B - C)$ is:
(1) 4 (2) 6
(3) 5 (4) 3

67. A circle is inscribed in ΔABC, touching AB at P, BC at Q and AC at R. If AR = 5 cm, RC = 6 cm and AB = 12 cm, then the perimeter of ΔABC is:
(1) 40 cm (2) 32 cm
(3) 37 cm (4) 36 cm

68. The income of A is 50% more than that of B. If the income of A is increased by 40% and the income of B is increased by 90%, then the percentage increase in their combined income will be
(1) 64 (2) 55
(3) 60 (4) 70

69. $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1}$ =?

(1) $\sec\theta \sin\theta$ (2) $\sec\theta \tan\theta$
(3) $\sec\theta + \tan\theta$ (4) $\sec\theta - \tan\theta$

70. If $ab + bc + ca = 8$ and $a^2 + b^2 + c^2 = 20$, then a possible value of $\frac{1}{2}(a + b + c)[(a-b)^2 + (b-c)^2 + (c-a)^2]$ is:

(1) 72 (2) 56
(3) 84 (4) 80

71. A shopkeeper marks his goods at 40% more than its cost price and allows a discount of 25% on the marked price. His gain or loss percent is:

(1) 5% loss (2) 15% gain
(3) 10% loss (4) 5% gain

72. The average of thirteen number is 80. The average of the first five numbers is 74.5 and that of the next five numbers is 82.5. The 11^{th} number is 6 more than the 12^{th} number and the 12^{th} number in 6 less than the 13^{th} number. What is the average of the 11^{th} and the 13^{th} numbers?

(1) 87 (2) 86
(3) 86.5 (4) 87.5

73. The value of $(5 + 3 \div 5 \times 5 \div (3 \div 3 \text{ of } 6)$ of $(4 \times 4 \div 4 \text{ of } 4 + 4 \div 4 \times 4)$ is:

(1) $8\frac{1}{5}$ (2) $7\frac{1}{3}$
(3) $9\frac{3}{5}$ (4) $6\frac{2}{3}$

74. A sum of ₹ 15,000 is lent at 16% p.a. compound interest. What is the difference between the compound interest for the second year and the third year?

(1) ₹ 544 (2) ₹ 445.44
(3) ₹ 454.88 (4) ₹ 548

75. A person sold an article at a loss of 8%. Had he sold it at a gain of 10.5%, he would have received ₹ 92.50 more. To gain 12%, he should have sold it for :

(1) ₹ 540.50 (2) ₹ 560
(3) ₹ 580 (4) ₹ 537.40

PART-IV (ENGLISH LANGUAGE)

76. Select the correct passive form of the given sentence.

At night, lock the outer gate.

(1) The outer gate is requested to be locked at night
(2) The outer gate is locked at night
(3) The outer gate be locked at night
(4) Let the outer gate be locked at night

77. In the sentence, identify the segment which contains the grammatical error.

Every employee of the company were given a two bedroom flat as Diwali bonus.

(1) a two bedroom flat
(2) as Diwali bonus
(3) Every employee
(4) were given

78. Select the synonym of the given word.

Indelible

(1) Illegible (2) Inerasable
(3) Ineffective (4) Illegal

79. Select the wrongly spelt word.

(1) Controversial
(2) Conquer
(3) Contemporary
(4) Cooperation

Directions (80–84): In the following passage some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.

PASSAGE

Pigeon racing has become increasingly popular in parts of China ...**(80)**... the country's elite and its middle class. Sun Yan, the deputy general-secretary of Beijing Racing Pigeons Association, ...**(81)**... that at least 1,00,000 pigeon breeders live in Beijing, and ...**(82)**... 90,000 of them are registered with Racing Pigeons Associations at ...**(83)**... levels, to qualify for the games held in the spring and autumn. Competitions can be lucrative for ...**(84)**... owners, with some prizes amounting to tens of thousands of dollars. Liu said in recent years, pigeon racing has been surging in popularity across China.

80. (1) along (2) about
(3) among (4) against

81. (1) clarified (2) told
(3) advised (4) said

82. (1) almost (2) nearby
(3) utmost (4) exact

83. (1) differ (2) differed
(3) differential (4) different

84. (1) birds (2) pigeons
(3) animal (4) bird

85. Select the most appropriate option of substitute the underlined segment in the given sentence. If no substitution in required, select 'No improvement'.

I <u>try to solve</u> this problem at least for two hours.

(1) have been trying to solve
(2) tried to be solving
(3) No improvement
(4) am try to solve

86. Select the most appropriate word to fill in the blank.

The burning of the effigy of Ravana on Dussehra ..... the burning of all evils.

(1) epitomizes (2) symbolizes
(3) intensifies (4) personifies

87. Select the most appropriate meaning of the given idiom.

Give someone the cold shoulder

(1) Pamper someone
(2) Do something pointless
(3) Ignore someone
(4) Give away a secret

88. Select the wrongly spelt word.

(1) Expire (2) Explain
(3) Experience (4) Except

89. Select the antonym of the given word.

Eminent

(1) Exalted
(2) Impressive
(3) Inconspicuous
(4) Distinguished

90. Select the most appropriate word to fill in the blank.

There is hope that better forestry management will help in the ..... of the wild life that is constantly facing threat because of increasing human activities.
(1) guarding (2) salvating
(3) supervision (4) conservation

91. Given below are four jumbled sentences. Select the option that given their correct order.
1. Mango, the so-called "king of fruits", is something of a national obsession of India.
2. There was a bumper crop of mangoes in different states.
3. It resulted in prices coming down and sales going up much to the delight of buyers and sellers alike.
4. 2017 proved to be a very good year for mango lovers.
(1) CADB (2) CDAB
(3) ADCB (4) ADBC

92. Select the word which means the same as the group of words given.
An enclosure of keep the birds in
(1) Stable (2) Apiary
(3) Sanctuary (4) Aviary

93. In the sentence identify the segment which contains the grammatical error.
Cyclone idai is regarded as one of the worst tropical cyclone on record to affect Arfica and the Southern Hemisphere as a whole.
(1) Cyclone Idai is regarded
(2) The worst tropical cyclone
(3) To affect Africa
(4) As a whole

94. Select the antonym of the given word.
Agony
(1) Anxiety (2) Distress
(3) Comfort (4) Misery

95. Select the synonym of the given word.
Triumph
(1) Victory (2) Fight
(3) Attack (4) Peace

96. Select the correct active form of the given sentence.
Their children were brought up with great care.
(1) They have been bringing up their children with great care
(2) They had brought up their children with great care
(3) They brought up their children with great care
(4) Their children brought them up with great care

97. Select the word which means the same as the group of words given.
An inscription on a tombstone written in memory of the deceased.
(1) Slab (2) Basilica
(3) Epitaph (4) Pillar

98. Given below are four jumbled sentences. Select the option that given their correct order.
A. Around 600 million of them live in areas of high to extreme water stress.
B. India is suffering from the worst water crisis, with one billion people living in water scarcity.
C. This is even more than that of China and US combined.
D. The reason is that at 24 per cent, India uses the most groundwater drawn out globally.
(1) ACBD (2) ADCB
(3) BADC (4) BDAC

99. Select the most appropriate option of substitute the underlined segment in the given sentence. If no substitution in required, select No improvement.
If you listen to the English news, <u>it improve</u> your English.
(1) It will improve
(2) No improvement
(3) It improved
(4) It is improving

100. Select the most appropriate meaning of the given idiom.
Pull yourself together
(1) Go to sleep
(2) Try to understand
(3) Calm down
(4) Do a good job

Short Answers

1. (4)	**2.** (2)	**3.** (4)	**4.** (4)	**5.** (1)	**6.** (1)	**7.** (4)	**8.** (2)	**9.** (3)	**10.** (3)
11. (1)	**12.** (3)	**13.** (1)	**14.** (2)	**15.** (4)	**16.** (3)	**17.** (4)	**18.** (2)	**19.** (1)	**20.** (2)
21. (2)	**22.** (4)	**23.** (4)	**24.** (1)	**25.** (3)	**26.** (4)	**27.** (2)	**28.** (2)	**29.** (2)	**30.** (4)
31. (1)	**32.** (2)	**33.** (2)	**34.** (4)	**35.** (4)	**36.** (2)	**37.** (2)	**38.** (1)	**39.** (1)	**40.** (3)
41. (3)	**42.** (2)	**43.** (4)	**44.** (2)	**45.** (2)	**46.** (1)	**47.** (1)	**48.** (1)	**49.** (4)	**50.** (3)
51. (4)	**52.** (3)	**53.** (1)	**54.** (2)	**55.** (2)	**56.** (1)	**57.** (4)	**58.** (2)	**59.** (4)	**60.** (1)
61. (3)	**62.** (1)	**63.** (2)	**64.** (4)	**65.** (4)	**66.** (3)	**67.** (4)	**68.** (3)	**69.** (3)	**70.** (1)
71. (4)	**72.** (1)	**73.** (3)	**74.** (2)	**75.** (2)	**76.** (1)	**77.** (4)	**78.** (2)	**79.** (3)	**80.** (3)
81. (4)	**82.** (1)	**83.** (4)	**84.** (4)	**85.** (1)	**86.** (2)	**87.** (3)	**88.** (3)	**89.** (3)	**90.** (4)
91. (4)	**92.** (4)	**93.** (2)	**94.** (3)	**95.** (1)	**96.** (3)	**97.** (3)	**98.** (3)	**99.** (1)	**100.** (3)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (4) On observing the options, the figure given under option (4) is indeed embedded in the original figure.

2. (2) Student (1) → Education (4) → Degree (6) → Interview (3) → Job (2) → Retirement (5)

3. (4) Sadness is the opposite of Excitement.

Similarly, Condemnation is the opposite of Respect.

4. (4) Quantity of the mixture = 9 litres each

Therefore, in

Mixture 1 →

Milk : Juice = 2 : 1 = 6 : 3; total = 9

In Mixture 2 →

Milk : Juice = 4 : 5; total = 9

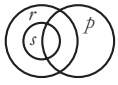
After mixing both the mixtures the ratio

Milk : Juice will be = 6 + 4 : 3 + 5 = 10 : 8 = 5 : 4

5. (1) All snakes are reptiles.

Some snakes and reptiles are poisonous.

So, the best venn diagram is



6. (1) $(7)^3 - 5 = 343 - 5 = 338$

$(6)^3 + 1 = 216 + 1 = 217$

$(3)^3 + 1 = 27 + 1 = 28$

$(4)^3 + 1 = 64 + 1 = 65$

7. (4) The series will be:

bacdca/bacdca/bacdca

8. (4) According to the question,

Interchange the – and + sign the above equation become correct.

$10 - 5 \div 10 \times 8 + 10$ (Applying BODMAS)

or, $10 - 0.5 \times 8 + 10$

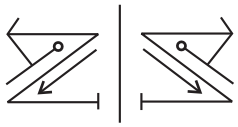
or, $10 - 4 + 10$

or, $20 - 4$

$\therefore$ 16

9. (3) Tapti river flows towards westwards while all the three rivers flows eastwards.

10. (3) In a plane mirror, a mirror image is a reflected duplication of an object that appears almost identical, but it is reversed in the direction perpendicular to the mirror surface. As an optical effect it results from reflection of substances such as a mirror or water.

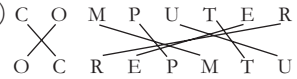


11. (1) The paper is unfolded in two steps :

Step-1

Step-1

12. (3)



Similarly,

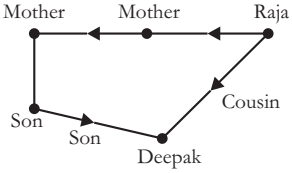
13. (1) Moving in the clockwise direction :

Cube 1 - 2 6 4

Cube 2 - 2 5 3

Clearly, 4 is opposite to 3.

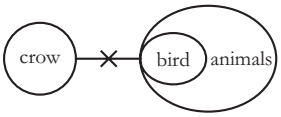
14. (3)



F is the wife of C's brother.

Hence, F is the sister-in-law of C.

15. (4)



Conclusions:

I. Some animals are crows. – (False) it may be possible.

II. Some animals are bird. – (True)

III. No animal is a crow. – (False) it may be possible.

The correct option is (4) conclusion II and either conclusion I or III follows.

16. (3) C A B

$3 \times 1 \times 2 = 6$

B E D

$2 \times 5 \times 4 = 40$

$\therefore$ H A D

$8 \times 1 \times 4 =$ **32**

17. (4) The sum of all the numbers in the given number set is even

$5 + 13 + 12 = 30$

The given options are:

$13 + 17 + 11 = 41$ (odd)

$11 + 15 + 9 = 35$ (odd)

$15 + 19 + 13 = 47$ (odd)

$6 + 10 + 8 = 24$ (even)

18. (2) Except FGHJ, all other options are having first two letters in reverse order.

Hence, option (2) is different from the rest.

19. (1) As 'Audience' is a group of people who come to the Cinema. Similarly, 'Congregation' is a group of people who assembled for religious worship in Church.

20. (2) $7 \times 4 + 4 = 32$

Similarly,

$13 \times 7 + 7 = 98$

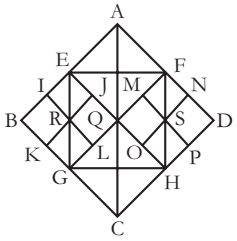
21. (2) In question figure, the 1st & 3rd figure contain similar objects and 2nd & 4th have same objects.

The 3rd figure formed after interchanging the two horizontal arrow lines.

Similarly, the 4th figure formed after interchanging left with its diagonal.

According to the pattern, the next figure in the series is:

22. (4)



The following squares formed in the figure:

ABCD, EFGH, EBGQ, FDHQ, AEQF, QGCH, BIRK, EIRJ, JRLQ, RKGL, QMSO, FMSN, NDPS, SPHO

Total number of squares = 14

23. (4)

M	N	O	P
–1 ↓	+1 ↓	–1 ↓	+1 ↓
L	O	N	Q

∴

F	G	H	I
–1 ↓	+1 ↓	–1 ↓	+1 ↓
E	H	G	J

24. (1) 8 —(+4)→ 12 —(+12)→ 24, (×3)

∴ 6 —(+3)→ 9 —(+9)→ 18, (×3)

25. (3) 98 95 86 82 66 (?) 61 36

–3 $-(3)^2$ –4 $-(4)^2$ –5 $-(5)^2$

Part-II (General Awareness)

26. (4) Kailash Satyarthi received the Nobel Peace Prize 2014 after Mother Teresa. He shared the prize with Malala Yusufzai of Pakistan. He is Children Activist and founder of Bachpan Bachao Andolan.

27. (2) Calcium is the most reactive element. Calcium comes after Lithium, Potassium and Strontium in Activity series of metals.

28. (2) International Day of Forests 2019 was observed on 21st March with the theme of Forest and Education.

29. (2) Gold is the most ductile metal, one ounce of gold can be drawn into more than 80 km of thin gold wire.

30. (4) Article 19(1) says:

(a) to freedom of speech and expression

(b) to assemble peaceably and without arms

(c) to form associations or unions

(d) to move freely throughout the territory of India

(e) to reside and settle in any part of the territory of India

(f) to practice any profession, or to carry on any occupation, trade or business.

31. (1) Quaternary sector is a sector in the economy which include Knowledge – based economic sectors. Information Technology, Media Research and development, Software solution, Blogging, Designing etc., comes under this category.

32. (2) Nandna block print is colourful art printing or motifs on fabric practiced in Tarapur village of Madhya Pradesh. Nandna printed fabric was regularly worn by the ladies of Bhil tribe.

33. (2) Rana Dasgupta was awarded the Rabindranath Tagore Literary Prize 2019 for the novel 'SOLO'. He is the Literary Director of the JCB Prize for Literature.

34. (4) Nathu Lal Pass connects Sikkim to Tibet. Nathu La Pass was closed in 1962 after Chinese Aggression and reopened in 2006. Nathu La is one of the three open trading border posts between China and India, the others are Shipkila in Himachal Pradesh and Lipulekh at the trisection point of Uttarakhand-India, Nepal and China.

35. (4) Qutub-ud-din Aibak was slave of Muhammad Ghori and became ruler of Delhi in 1206 and his dynasty was recognized as Slave Dynasty. Aibek was succeeded by Aram Shah, and then by his former slave Iltutmish. He constructed Qutab Minar in Delhi and Adhai Din ka Jhopra in Ajmer.

36. (2) K Radhakrishnan was the chairman of Indian Space Research Organization during 2009-2014 and played vital role in making the Mars Orbital Mission a success. Mars orbital mission was planned and executed between 2010-2014 and India became the first country to make it a success in its maiden attempt.

37. (2) National Highway 44 is the longest highway in India. It begins from Srinagar and ends at Kanyakumari passing through Delhi and 10 States. Central Public Works Department (CPWD) is maintaining National Highway 44.

38. (1) Lok Adalat have been created under Legal Services Authority Act, 1987. Concept of Lok Adalat is mentioned under Article 39A and its objective is to provide free legal services for the citizens. Permanent and non permanent are the two types of Lok Adalat.

39. (1) Slave dynasty rule from 1206-90 and became the first Muslim dynasty ruled over India. Though India was invaded multiple times before this *i.e.,* Muhammad Qassim, Muhammad Gori etc. but Slave dynsaty became the first dynasty to rule over India. Qutub-ud-din Aibak, Iltutmish, Razia Sultan, Balban were eminent kings of this dynasty.

40. (3) Ministry of Human Resources Development is implementing Mid-Day Meal Scheme. The scheme was launched as a Centrally Sponsored Scheme on 15th August, 1995. In 2001 MDMS became a cooked Mid Day Meal Scheme under which every child in every Government and Government aided primary school was to be served a prepared Mid Day Meal with a minimum content of 300 calories of energy and 8-12 gram protein per day for a minimum of 200 days.

41. (3) Water day is observed every year on 22nd March. The theme of 2019 Water day was 'Leaving no one behind' to focus on marginalized groups. The sustainable development goal 6 aims to ensure availability and sustainable management of water for all by 2030. Every year, UN-Water sets a theme for World Water Day corresponding to a current or future challenge.

42. (2) Makran Cup Boxing Championship was held in feb, 2019 at Chabahar, Iran. India won one gold medal in the cup which was snatched by Deepak Singh.

43. (4) India won one gold medal and five silver medals at Makran Cup Boxing in Iran, in feb, 19. Gold medal is snatched by Deepak Singh who defeated Jaafar Naseri in Finals.

44. (2) Aihole is the first capital of Badami Chalukyas before they moved to Badami which is located at 35 kms from it. Aihole is an important archaeological site and recognized as UNESCO World heritage site. It is situated near Malaprabha river valley, in Bagalakote district of Karnataka.

45. (2) Galvanization is a process of applying a protective Zinc layer on Iron to prevent from rusting. Iron is generally dipped in hot molten zinc in this process. Zinc layer on Iron eradicated direct contact of Iron to atmospheric moisture, thus protecting it from corrosion.

46. (1) Bagh caves are situated in state of Madhya Pradesh, Dhar District. Bagh caves are known for rock cut architecture. Mainly inspired from Buddhism. All of the 9 caves are viharas- the caves used for as residence by Buddhist Monks.

47. (1) The Bandipur National Park is situated in Karnataka and it is established in 1974. It is a tiger reserve National Park. Bandipur is located in Gundlupet taluq of Chamarajanagar district.

48. (1) Allaudin Khilji covered almost the whole of India up to its extreme south. He fought many battles, conquered Gujarat, Ranthambhore, Chittoor, Malwa and Deccan during his reign of 20 years. He died in 1316 AD and after his death, Khilji dynasty came to end.

49. (4) Andre Marie ampere founded the science of electromagnetism. Electromagnetism is the science of charge and of the forces and fields associated with charge. Electricity and magnetism are two aspects of electromagnetism.

50. (3) Chlorine is responsible for destruction of ozone layer. Bromine also does the same effect. Chlorofluorocarbons, hydro chlorofluorocarbons, carbon tetra chloride etc., are some other ozone depletion compounds. Ozone layer absorbs harmful UV radiations of sun.

Part-III (Quantitative Aptitude)

51. (4) Production of type C cars in 2015 = 53

Production of type D cars in 2017 = 67

Total production = 53 + 67 = 120

Production of type B cars in 2016 = 47

Production of type A cars in 2017 = 43

Total production = 47 + 43 = 90

$\therefore$ Ratio = 120 : 90

= 4 : 3

52. (3) $\frac{\text{speed of A}}{\text{speed of B}}$

$= \sqrt{\frac{\text{time taken by B to complete the remaining distance}}{\text{time taken by A to complete the remaining distance}}}$

$$\frac{\text{speed of A}}{\text{speed of B}} = \sqrt{\frac{8}{6\frac{1}{8}}}$$

$$= \frac{8}{7}$$

Speed of A $= \left(\frac{8}{7}\right) \times$ speed of B

Speed of A = 19.2 km/hr

53. (1) $12 \cot^2 \theta - 31 \operatorname{cosec} \theta + 32 = 0$

$12 (\operatorname{cosec}^2 \theta - 1) - 31 \operatorname{cosec} \theta + 32 = 0$

$12 \operatorname{cosec}^2 \theta - 31 \operatorname{cosec} \theta + 20 = 0$

$(4 \operatorname{cosec} \theta - 5)(3 \operatorname{cosec} \theta - 4) = 0$

$$\operatorname{cosec} \theta = \frac{5}{4} \text{ and } \frac{4}{3}$$

When $\operatorname{cosec} \theta = \frac{5}{4}$

Then $\tan \theta = \frac{4}{\sqrt{(5)^2 - (4)^2}}$

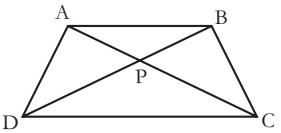
$= \frac{4}{3}$

when $\operatorname{cosec} \theta = \frac{4}{3}$,

then $\tan \theta = \frac{3}{\sqrt{(4)^2 - 3^2}}$

$= \frac{3}{\sqrt{7}} = \frac{3\sqrt{7}}{7}$

54. (2)



Given, AB || DC, AP = $(3x - 1)$ cm, PC = $(5x - 3)$ cm, BP = $(2x + 1)$ cm, PD = $(6x - 5)$ cm

$\Delta APB \sim \Delta CPD$

$$\frac{AP}{PC} = \frac{BP}{PD}$$

$$\frac{3x-1}{5x-3} = \frac{2x+1}{6x-5}$$

$$18x^2 - 21x + 5 = 10x^2 - x - 3$$

$$8x^2 - 20x + 8 = 0$$

$$2x^2 - 5x + 2 = 0$$

On solving further,

$$2x^2 - 4x - x + 2 = 0$$

$$(x - 2)(2x - 1) = 0$$

$\therefore$ $x = 2, \frac{1}{2}$

But x cannot be equal to $\frac{1}{2}$ as on putting $x = \frac{1}{2}$ we will get negative values for PD and PC, which is not possible.

Putting $x = 2$

BD = BP + PD

$= 2x + 1 + 6x - 5 = 5 + 7 = 12$ cm

55. (2) $\sqrt{\sec^2\theta + \operatorname{cosec}^2\theta} \times \sqrt{\tan^2\theta - \sin^2\theta}$

$= \sec\theta.\operatorname{cosec}\theta \times \sin^2\theta.\sec\theta$

$= \sin\theta \sec^2\theta$

56. (1) Given is $r_1 = 9$ cm,

$h = 1.4$ m = 140 cm

Volume of cylinder = 7480 cm^3

Volume of cylinder $= \frac{22}{7}[9^2 - r_2^2] \times 140 = 7480$

$= 81 - r_2^2 = 17$

$R_2 = \sqrt{64} = 8$ cm

Required thickness of cylinder

$= r_1 - r_2 = 9 - 8$

= 1 cm

57. (4) $\sqrt{x^4+y^4-2x^2y^2}$

$\sqrt{(x^2-y^2)^2} = x^2-y^2$

$\left(a+\frac{1}{a}\right)^2-\left(a-\frac{1}{a}\right)^2 = 4$

58. (2) Triangle ABC is a right-angle triangle.

So, in ΔABC, median BP will be half of hypotenuse.

So, $BP = \frac{25}{2} = 12.5$ cm

Centroid divides the median in the ratio of 2 : 1.

$\therefore BG = \frac{2}{3} \times 12.5 = \frac{50}{6} = 8\frac{1}{3}$

59. (4) Total production of type B cars = 54 + 45 + 47 + 50 + 40 = 236

Total production of type A, B and D cars in 2017 = 43 + 50 + 67 = 160

$\%$ increase $= 236 - \frac{160}{236}$

$= 32.2\%$

60. (1) Total production of type D cars in 5 years = 46 + 50 + 54 + 67 + 68 = 285

Average production of type D cars

$= \frac{285}{5} = 57$

Production of type E cars in 2018 = 70

$\%$ Less $= \frac{(70-57)}{70} \times 100 \approx 18.6.$

61. (3) Given numbers = 21, 22, 60 and 64

Now, x is subtracted from the number

So, $(21-x) : (22-x) :: (60-x) : (64-x)$

$(22-x)(60-x) = (21-x)(64-x)$

$x = 8$

Mean proportion of $(x+1)$ & $(7x+8)$

$= \sqrt{9 \times 64} = 24$

62. (1) Total production of cars in 2018

= 38 + 40 + 54 + 68 + 70

= 270

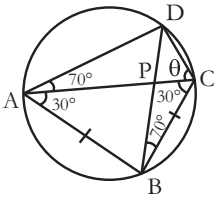
Production of type C car in 2018

= 54

Central angle $= \frac{54}{270} \times 360°$

$= 72°$

63. (2)



Given, AB = BC

So, ∠BAC = ∠BCA = 30°

and

∠DBC = ∠DAC = 70° (Angle made by cord CD)

In cyclic quadrilateral, opposite angles are supplementary angle

So, ∠BAD + ∠BCD = 180°

100° + ∠BCD = 180°

∠BCD = 80°

So, angle ∠PCD = 80 – 30 = 50°

64. (4) Total work = LCM of $(1, 2, \frac{5}{4})$ = 10 units

Efficiency of A $= \frac{10}{1} = 10$ units per hour

Efficiency of B $= \frac{10}{2} = 5$ units per hour

Efficiency of C $= 10 \div \frac{5}{4} = -8$ units per hour

Work done by A + C in 2 hours = (10 – 8) × 2 = 4 units

Efficiency of B and C = – 3

Therefore, time taken by B + C to empty the tank $= \frac{4}{3}$ hours = 80 minutes

Now the time = 11:00 + 1 hr 20 minutes

= 12:20 p.m.

65. (4) For a number to be divisible by 88, the number should be divisible by both 11 and 8.

A number is divisible by 8 if the number formed by the last three digits is divisible by 8.

4y2 should be divisible by 8.

So, $y = 3$ or $y = 7$

A number is divisible by 11 if the difference of the sum of its digits at odd places and the sum of its digits at even places, is divisible by 11.

$(2 + 4 + 4 + 0) - (y + x + 7 + 2)$

$= 0$ or 11

Now, $x + y - 1 = 0$ (for $y = 3$)

$x + 3 - 1 = 0$

$x = -2$ ..... digit cannot be negative.

And, $x + y - 1 = 0$ (for $y = 7$)

$x = -6$ ..... digit cannot be negative

So, $x + y - 1 = 11$

$x = 5$ for $y = 7$

$4x + 3y = 4 \times 5 + 3 \times 7$

= 41 (not in options)

$x = 9$ for $y = 3$

We have $x = 9$ and $y = 3$

$4x + 3y = 4 \times 9 + 3 \times 3$

$= 45$

66. (3) $\because \frac{8x^3-27y^3}{2x-3y} = Ax^2 + Bxy + Cy^2$

or, $\frac{(2x)^3-(3y)^3}{2x-3y} = Ax^2 + Bxy + Cy^2$

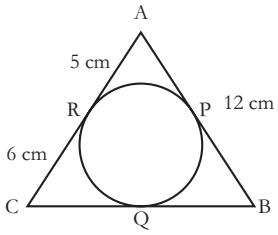
or, $\frac{(2x-3y)(4x^2+6xy+9y^2)}{2x-3y}$

Comparing the above equation with $Ax^2 + Bxy + Cy^2$

We have A = 4, B = 6, C = 9

Then (2A + B – C) = 8 + 6 – 9 = 5

67. (4)



In the above figure,

We know that CR = CQ, AR = AP, BP = BQ (tangents on a circle from an external point are equal)

Therefore,

AR = AP = 5 cm

CR = CQ = 6 cm

PB = AB – AP = 12 – 5 = 7 cm

BP = BQ = 7 cm

Perimeter of the triangle = AR + AP + BP + BQ + CQ + CR = 36 cm

68. (3) Starting income of B = 100

Then, starting Income of A = 150

Income of A is increased by 40%, so

New income of A $= 150 \times \frac{140}{100} = 210$

Income of B is increased by 90%,

So, New income of B

$= 100 \times \frac{190}{100} = 190$

Total starting income

= 100 + 150 = 250

Total new income
$= 210 + 190 = 400$

$$\% \text{ increase} = \frac{400 - 250}{250} \times 100$$
$$= 60\%$$

69. (3) $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} =$

$$\frac{\sin\theta - (\cos\theta - 1)}{\sin\theta + (\cos\theta - 1)} \times \frac{\sin\theta - (\cos\theta - 1)}{\sin\theta - (\cos\theta - 1)}$$
$$= \frac{\sin^2\theta + (\cos\theta - 1)^2 - 2\sin\theta(\cos\theta - 1)}{\sin^2\theta - (\cos\theta - 1)^2}$$

On simplifying the equation, we get,

$$\frac{2 - 2\cos\theta + 2\sin\theta - 2\sin\theta\cos\theta}{2\cos\theta(1 - \cos\theta)}$$
$$= \frac{(1 - \cos\theta)(1 + \sin\theta)}{\cos\theta(1 - \cos\theta)}$$
$$= \frac{1 + \sin\theta}{\cos\theta} = \sec\theta + \tan\theta$$

70. (1) $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$
$= 20 + 2 \times 8 = 36$
$a + b + c = 6$
Therefore,

$$\frac{1}{2}(a + b + c)[(a - b)^2 + (b - c)^2 + (c - a)^2] = \frac{1}{2}(a + b + c)[2(a^2 + b^2 + c^2) - 2(ab + bc + ca)]$$
$$= \frac{1}{2} \times 6[2(20 - 8)]$$
$$= 72$$

71. (4) Cost price (CP) = ₹ 100
Now, Marked price (MP) = ₹ 100
At 25% discount,

$$\text{Selling price (SP)} = 140 \times \frac{75}{100}$$
$$= ₹ 105$$
$$\% \text{ Profit} = \frac{105 - 100}{100} \times 100 = 5\%$$

72. (1) Sum of 13 number
$= 13 \times 80 = 1040$
Sum of first five number
$= 5 \times 74.5 = 372.5$
Sum of next five number
$= 5 \times 82.5 = 412.5$
Sum of first 10 number
$= 372.5 + 412.5 = 785$
Now, sum of last three number
$= 1040 - 785 = 255$

According to question,
$x + 6 + x + x + 6 = 255$
$x = 81$
11^{th} number = 87
13^{th} number = 87

$$\text{Average} = \frac{87 + 87}{2} = 87$$

73. (3) $(5 + 3 \div 5 \times 5 \div (3 \div 3 \text{ of } 6)$ of $(4 \times 4 \div 4$ of $4 + 4 \div 4 \times 4)$

$$= (5 + \frac{3}{5} \times 5) \div (3 \div 3 \times 6) \text{ of } (4 \times 4 \div 16 + 4 \div 4 \times 4)$$
$$= 8 \div \left(\frac{1}{6}\right) \text{ of } \left(4 \times \frac{4}{16} + 1 \times 4\right)$$
$$= 8 \div \frac{1}{6} \text{ of } 5$$
$$= 8 \div \frac{5}{6}$$
$$= 8 \times \frac{6}{5} = \frac{48}{5} = 9\frac{3}{5}$$

74. (2) Amount after 1^{st} year

$$= 15000\left(1 + \frac{16}{100}\right) = ₹ 17400$$

Amount after 2^{nd} year

$$= 17400\left(1 + \frac{16}{100}\right) = ₹ 20184$$

Amount after 3^{rd} year

$$= 20184\left(1 + \frac{16}{100}\right) = ₹ 23413.44$$

Interest for 2^{nd} year = amount after 2 years – amount after 1 year
$= 20184 - 17400 = ₹ 2784$
Interest for 3^{rd} year = amount after y years – amount after 2 year
$= 23413.44 - 20184 = ₹ 3229.44$
Difference in interest
$= 3229.44 - 2784 = ₹ 445.44$

75. (2) Cost price = 100 units and is sold at 8% loss,
Selling Price (SP)

$$= 100 \times \frac{92}{100} = ₹ 92$$

Further 10.5% gain,

$$\text{Selling Price} = 100 \times \frac{110.5}{100}$$
$$= ₹ 110.5$$

According to the question, difference in selling prices is ₹ 92.5
So, $110.5 - 92 = 18.5$
18.5 unit = 92.5
1 unit = ₹ 5
Therefore, cost price will be
$= 100 \times 5 = ₹ 500$
At 12% gain, selling price will be

$$= 500 \times \frac{112}{100} = ₹ 560$$

PART-IV (ENGLISH LANGUAGE)

76. (1) Active form to Passive Voice:
• The places of subject and object will be interchanged in the sentence.
• Only 3^{rd} form of verb or past participle will be used as a main verb in the passive voice.
The outer gate is requested to be locked at night.

77. (4) 'Were' must be replaced with 'was' to form a grammatically correct answer.

78. (2) **Indelible/Inerasable:** Marks making by ink or a pen that cannot be removed; incapable of being erased.

79. (3) Wrongly spelt word is contamporary and the correct spelling is 'Contemporary'.

80. (3) 'Among' means the same. The blank needs a preposition which implies 'occurring in or shared by (some members of a group or community)'.

81. (4) 'Said' meaning 'utter words so as to convey information' an opinion, a feeling or intention is the appropriate word to fill in the blank.

82. (1) 'Almost' meaning 'not more than' is the appropriate word to fill in the blank.

83. (4) 'Different' meaning 'not the same as another or each other; unlike in nature, form, or quality' is the appropriate word to fill in the blank.

84. (4) Appropriate word to fill in the blank → bird.

85. (1) The tense of the underlined segment is incorrect. Present perfect continuous tense should be used.
For improvement of sentence use 'have been trying to solve' in place of 'try to solve'.

86. (2) 'Symbolize' means 'be a symbol of' and it is the appropriate word to fill in the blank.

87. (3) If someone gives you the cold shoulder, they deliberately stop being friendly to you and ignore you.

88. (3) 'Experience' is the incorrectly spelt word. The correct spelling is 'experience' which means 'practical contact with and observation of facts or events'.

89. (3) Opposite of the Eminent is :

Inconspicuous: not clearly visible or attracting attention.

90. (4) 'Conservation' meaning 'preservation, protection, or restoration of the natural environment and of wildlife' is the appropriate word to fill in the blank.

91. (4) Logical order of the four jumbled sentences is → ADBC

92. (4) **Aviary:** A large cage, building or enclosure for keeping birds in.

93. (2) 'The worst tropical cyclone' is erroneous. The noun following the phrase 'one of the' is always a plural noun.

Delete 'one of' before 'the worst tropical' in the sentence.

94. (3) Opposite of Agony is:

Comfort: a state of physical ease and freedom from pain or constraint.

95. (1) **Triumph/Victory:** A great victory or achievement; an act of defeating an enemy or opponent in a battle, game, or other competition.

96. (3) Changing passive form to Active form.

• They brought up their children with great care.

97. (3) **Epitaph:** a phrase or form of words written in memory of a person who has died, especially as an inscription on a tombstone.

98. (3) Logical order of the four jumbled sentences → BADC

99. (1) For improvement of sentence, use 'it will improve' in place of 'it improve'.

100. (3) The phrase 'pull yourself together' means 'to recover control of one's emotions'.

You've got to pull yourself together and find a job.

❑❑❑

2

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 04 June, 2019 (I)

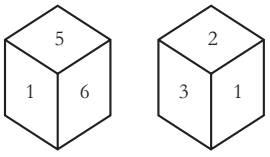
PART-I
(GENERAL INTELLIGENCE & REASONING)

1. Select the set in which the numbers are related in the same way as the numbers are related in the set below.
(3, 24, 4)
(1) (2, 30, 8) (2) (12, 84, 4)
(3) (6, 35, 11) (4) (4, 72, 9)

2. To correct the equation given below, which two symbols should be mutated?
12 – 8 + 12 × 9 ÷ 3 = 9
(1) – and ÷ (2) + and ÷
(3) + and × (4) + and –

3. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
3, 7, 16, 35,?, 153
(1) 74 (2) 78
(3) 63 (4) 84

4. Two different situations of the same dice are shown. If number 6 is on the lower board then what number will be on the upper board?



(1) 3 (2) 4
(3) 2 (4) 5

5. As 'Advocate' is related to 'Justice' in the same way 'mediator' is related to ..... .
(1) Agreement
(2) Communications
(3) Decision
(4) Injustice

6. Two statements are given below and then conclusions I, II and III are given. Assuming the statement to be true, even if it seems to be at variance from commonly known facts, you have to decide which of the given conclusions logically follows the given statements.

Statement:
All rulers are machines.
Some machines are expensive items.

Conclusions:
I. Some rulers are expensive items.
II. Some expensive items are machines.
III. All expensive items are machines.
(1) Both conclusions I and II follow.
(2) Both the conclusions II and III follow.
(3) Only conclusion II follows.
(4) Only conclusions I follows.

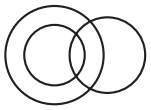
7. Arrange the following words in a logical and meaningful order.
A. Buying
B. Food
C. Market
D. Vegetables
E. Cook
(1) A, D, E, C, B
(2) D, E, C, A, B
(3) C, E, D, A, B
(4) C, D, A, E, B

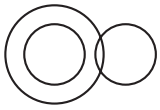
8. ₹ 1875 are divided into A, B and C in such a way that A's share is half of the combined share of B and C and B's share is one-fourth of the combined share of A and C. How much is C's share more than A's share?
(1) ₹ 200 (2) ₹ 250
(3) ₹ 225 (4) ₹ 500

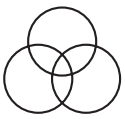
9. Three numbers from the following four numbers are somehow identical and one number is uneven. Select that uneven number.
(1) 254 (2) 217
(3) 126 (4) 730

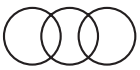
10. Select the letter combination that is placed sequentially on the blank spaces of the letter series below to complete the given series.
b_bab_bc_abbb_ba_b
(1) cbabc (2) bcbab
(3) cbbcb (4) cbbac

11. Select the diagram that shows the best relationship between the given categories.
Uncle, Relative, Rich

(1) 

(2) 

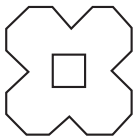
(3) 

(4) 

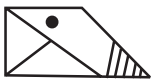
12. Three letter groups from the following four-letter groups are similar in some way and one is unequal. Select the odd alphabets.
(1) CFIL (2) GHIJ
(3) PSUX (4) MOQS

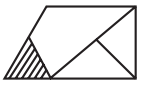
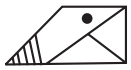
13. A paper is folded and cut as shown below. What will it look like when open it?

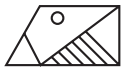
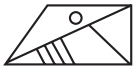
(1)  (2) 

(3)  (4) 

14. If the mirror is placed on the right side of the diagram given below, then select the right mirror image to be made.



(1)  (2) 

(3)  (4) 

15. Select the set in which the numbers are related in the same way as the numbers are related in the set given below.

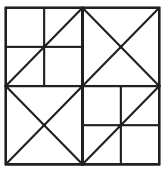
(9, 35, 16)

(1) (36, 55, 25) (2) (25, 30, 4)
(3) (81, 65, 36) (4) (16, 50, 64)

16. In a family of eight people, there are two couples, both couples have two children each. B and D are brothers and they each have two children. E is aunt of A, A is cousin of C. C is sister of H, H is cousin of G. F is the wife of B. How is H related to F?

(1) Nephew
(2) Son-in-law
(3) Brother-in-law
(4) Son

17. How many squares are there in the figure given below?



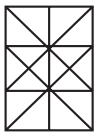
(1) 13 (2) 14
(3) 12 (4) 16

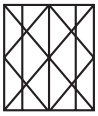
18. In a code language, VICTORY is written as CIVSYRO. What will the TRAITOR be written in the same code language?

(1) ARTHROT (2) RTHORT
(3) RTAJORT (4) ARTJOTR

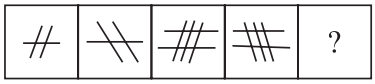
19. Select the option in which the given figure is implicit

Rotation is not allowed

(1)  (2) 

(3)  (4) 

20. Select the next figure in the following figure series.



(1)  (2) 

(3)  (4) 

21. From the given options, select the word pair whose two words are related to each other in the same way as the words of the word pair given below are related.

Book : Encyclopedia

(1) Reptile : Python
(2) Furniture : Wood
(3) Tennis : Ball
(4) Tree : Forest

22. Select the number pair in which the two numbers are related in the same way as the two numbers are related in the number pair given below.

36 : 84 : :? :?

(1) 57 : 135 (2) 27 : 63
(3) 21 : 51 (4) 45 : 95

23. Select the option that is related to the third letter group in the same way as the second letter group is related to the first letter group.

CEGI : AGEK : : DFHJ :?

(1) CHFI (2) CGIK
(3) BDJK (4) BHFL

24. If DIG is coded as 25 and CUT as 49, then how will be KICK coded?

(1) 43 (2) 34
(3) 41 (4) 39

25. Three words from the following four words are somehow similar and one word is uneven. Choose the odd word.

(1) Peanut (2) Fennel
(3) Cumin (4) Mustard

PART-II
(GENERAL AWARENESS)

26. Which country first introduced the Goods and Services Tax?

(1) Canada (2) France
(3) Germany (4) USA

27. The famous species of tree 'Sundari' is found in ..... .

(1) Mangrove forest
(2) Tropical deciduous forest
(3) Himalaya Mountains
(4) Tropical Rainforest

28. The virtue of catenation prevails in ..... .

(1) Sulfur (2) Nitrogen
(3) Silicon (4) Carbon

29. Who won the only gold medal for India in the 38th Gee Bee boxing tournament held in Helsinki, Finland?

(1) Naveen Kumar
(2) Kavinder Singh Bisht
(3) Mohammed Hussamuddin
(4) Shiv Thapa

30. After the Olympic Council of Asia (OCA) has discarded ..... in 2018, it has decided to resume in Asian Games, organised in Hangzhou, China, 2022.

(1) Football (2) Fencing
(3) Cricket (4) Volleyball

31. In which of the following places was the rule of the Wadiyar dynasty?
(1) Patna (2) Mysore
(3) Jabalpur (4) Guwahati

32. The report of Malimath Committee is related to which of the following?
(1) Criminal Justice System Reform
(2) Textile Sector Reforms
(3) Stock Market Reform
(4) Judicial Latency

33. Which queen died in 1564 during the defending of the Garh Kantaga while fighting with Mughal forces?
(1) Rani Avantibai
(2) Rani Durgavati
(3) Rani Rudrabara
(4) Rani Ahilyabai

34. Methyl propane is an isomer of which of the following?
(1) N-Butene (2) N-Pentane
(3) N-Hexane (4) N-Propane

35. In which year did Dorabji Tata set up the Tata Iron and Steel Company (TISCO)?
(1) 1913 (2) 1919
(3) 1911 (4) 1907

36. According to the Economist Intelligence Unit 'Worldwide Cost of Living Survey, 2019', which of the following cities is not one of the three cheapest cities in India?
(1) New Delhi (2) Mumbai
(3) Bengaluru (4) Chennai

37. The ..... edition of the Indo-Indonesia Coordinated Patrol (Indo-Indo Coperte) held from 19 March to 4 April, 2019 was inaugurated in Port Blair, Andaman and Nicobar Islands.
(1) 33 (2) 23
(3) 45 (4) 42

38. The ..... dance performed by the Buddhists to take away the evil spirits is a form of dance in Himachal Pradesh.
(1) Gogra (2) Chham
(3) Dhaam (4) Natya

39. Name the first judge of the Supreme Court, against which the proposal of impeachment was presented in the Parliament of independent India.
(1) Justice Ramaswami
(2) Justice Mahajan
(3) Justice Veerswamy
(4) Justice Subba Rao

40. Which one of the following elements is a metalloid?
(1) Tin (2) Silicon
(3) Phosphorus (4) Bismuth

41. Which gas in its solid state is also called dry ice?
(1) Carbon dioxide
(2) Oxygen
(3) Nitrogen
(4) Hydrogen

42. In 1026 AD, who attacked and looted the famous Somnath temple?
(1) Muhammad Ghauri
(2) Mahmood Ghazni
(3) Genghis Khan
(4) Nadir Shah

43. Who was the first woman Director General of Police in Puducherry?
(1) Kiran Bedi
(2) Ashthi Tang
(3) Sundari Nanda
(4) Kanchan Choudhary

44. Which of the following substances is mined in Odisha's Badamphad mines?
(1) Hematite (2) Aurite
(3) Dolomite (4) Bauxite

45. ..... is the founder of Facebook.
(1) Jimmy Wales
(2) Brian Acton
(3) Larry Page
(4) Mark Zuckerberg

46. In 1876, the Indian National Association was established by ..... in Calcutta.
(1) V.K. Chiplunkar
(2) Anand Mohan Bose
(3) Shishir Kumar Ghosh
(4) Badruddin Tyabji

47. The game dance from 'Thoda' is associated with which state?
(1) Andhra Pradesh
(2) Sikkim
(3) Himachal Pradesh
(4) Haryana

48. Musi and Bhima are tributaries of ..... river.
(1) Brahmaputra
(2) Mahanadi
(3) Kaveri
(4) Krishna

49. J.J. Thomson received the Nobel Prize in Physics for his discovery of ..... .
(1) Electron (2) Positron
(3) Proton (4) Neutron

50. Who was sworn in as the new Chief Minister of Goa after the death of Manohar Parrikar in March 2019?
(1) H.D. Kumaraswamy
(2) Ashok Gehlot
(3) Vasundhara Raje
(4) Pramod Sawant

PART-III
(QUANTITATIVE APTITUDE)

51. The value of $2 \times 3 \div 2$ of $3 \times 2 \div (4 + 4 \times 4 \div 4$ of $4 - 4 \div 4 \times 4)$ is:
(1) 8 (2) 2
(3) 1 (4) 4

52. In triangle ABC, the points F and E respectively on AB and AC sides are as follows : FE||BC and FE divide the triangle into two parts with equal area. If AD $\perp$ BC and AD intersect at FE at point G, then GD : AG =?
(1) $(\sqrt{2}+1) : 1$
(2) $(\sqrt{2}-1) : 1$
(3) $2\sqrt{2} : 1$
(4) $\sqrt{2} : 1$

53. A truck covers a distance of 384 km at a certain speed. If the speed is reduced by 16 km/h, it will take two hours more to cover the same distance. What is the 75% of the original speed (in km/h)?
(1) 54 (2) 42
(3) 45 (4) 48

54. The table shows the production (in thousands) of different types of cars.

Year/ Cars	2012	2013	2014	2015	2016
A	30	35	48	45	56
B	42	48	40	38	56
C	48	36	38	35	44
D	51	24	30	46	54
E	20	42	40	35	43

The total production of B type cars in the year 2012, 2014 and 2015 has been approximately what percentage more than the total production of A type cars in the year 2013 and 2016?

(1) 34.4 (2) 33.2
(3) 31.9 (4) 36.3

55. The average of twelve numbers is 42. The last five numbers have an average of 40 and the first four numbers have an average of 44. The sixth number is 6 less than the fifth number and 5 less than the seventh number. What will be the average of the 5th and 7th numbers?

(1) 44 (2) 44.5
(3) 43 (4) 43.5

56. The table shows the production (in thousands) of different types of cars.

Year/ Cars	2012	2013	2014	2015	2016
A	30	35	48	45	56
B	42	48	40	38	56
C	48	36	38	35	44
D	51	24	30	46	54
E	20	42	40	35	43

If the data related to the production of E type cars is represented by pie-chart, then the data representing the production of cars in 2013 will be the central angle of the radius (sector):

(1) 102° (2) 84°
(3) 70° (4) 80°

57. $\frac{2+\tan^2\theta+\cot^2\theta}{\sec\theta\,\text{cosec}\,\theta}$ is equal to:

(1) $\sec\theta\,\text{cosec}\,\theta$ (2) $\cot\theta$
(3) $\tan\theta$ (4) $\cos\theta\sin\theta$

58. Four years ago, the ratio of the ages of A and B was 4 : 5. Eight years from now, the ratio of the ages of A and B will be 11 : 13. What is the sum of the present age of both of them?

(1) 76 years (2) 72 years
(3) 80 years (4) 96 years

59. If $4-2\sin^2\theta-5\cos\theta=0$, $0°<\theta<90°$, then the value of $\sin\theta+\tan\theta$ is:

(1) $\frac{3\sqrt{3}}{2}$ (2) $3\sqrt{2}$

(3) $\frac{3\sqrt{2}}{2}$ (4) $2\sqrt{3}$

60. If the number of 9 digits is $985x\,3678y$, the number is divisible by 72, then the value of $(4x-3y)$ will be:

(1) 4 (2) 6
(3) 5 (4) 3

61. If $x+y+z=19$, $x^2+y^2+z^2=133$ and $xz=y^2$, then the difference between z and x is:

(1) 3 (2) 4
(3) 6 (4) 5

62. Someone sold an item at a loss of 15%. If he sold it for ₹ 30.60 more then he would get 9% profit. In order to get 10% profit, he has to sell the item in what amount?

(1) ₹ 128.40 (2) ₹ 130
(3) ₹ 140.25 (4) ₹ 132

63. An amount becomes 8,028 in 3 years at a fixed percentage interest rate and 12,042 in 6 years, when the interest is compounded annually. What is the actual amount?

(1) ₹ 5,352 (2) ₹ 5,235
(3) ₹ 5,253 (4) ₹ 5,325

64. The table shows the production (in thousands) of different types of cars.

Year/ Cars	2012	2013	2014	2015	2016
A	30	35	48	45	56
B	42	48	40	38	56
C	48	36	38	35	44
D	51	24	30	46	54
E	20	42	40	35	43

What is the ratio of total production of C type cars in year 2013 & A in year 2014 and the total production of B in year 2016 & E type cars in 2015?

(1) 11 : 12 (2) 12 : 11
(3) 10 : 11 (4) 12 : 13

65. A solid cube with a volume of 13824 cm^3 is cut into eight cubes of the same volume. The ratio of the surface area of the original cube and the total sum of the surface area of three smaller cubes will be:

(1) 2 : 3 (2) 2 : 1
(3) 4 : 3 (4) 8 : 3

66. If $x^4+x^{-4}=194$, $x>0$, then what would be the value of $(x-2)^2$?

(1) 6 (2) 2
(3) 1 (4) 3

67. If $\sin\theta\,\frac{P^2-1}{P^2+1}$, then $\cos\theta$ is equal to:

(1) $\frac{2P}{P^2-1}$ (2) $\frac{2P}{1+P^2}$

(3) $\frac{P}{1+P^2}$ (4) $\frac{P}{P^2-1}$

68. If $(5\sqrt{5}x^3-81\sqrt{3}y^3)\div(\sqrt{5}x-3\sqrt{3}y)$, $=(Ax^2+By^2+Cxy)$, then the value of $(6A+B-\sqrt{15}C)$ will be?

(1) 12 (2) 15
(3) 10 (4) 9

69. The ratio of efficiencies of A, B and C is 2 : 5 : 3. On working together, all three of them can complete work in 27 days. In how many days will both B and C together complete the $\frac{4}{9}^{th}$ part of that work?

(1) 15 days (2) $17\frac{1}{7}$ days
(3) 27 days (4) 24 days

70. In ΔABC, the bisectors of $\angle B$ and $\angle C$ meet at point O inside the triangle.
If $\angle BOC = 122°$, what will be the measure of $\angle A$?

(1) 62° (2) 64°
(3) 72° (4) 68°

71. A circle is drawn under a triangle ABC. The circle touches the sides AB, BC and AC at the points R, P and Q respectively. If AQ = 4.5 cm, PC = 5.5 cm and BR = 6 cm, then the perimeter of triangle ABC is:

(1) 32 cm (2) 28 cm
(3) 30.5 cm (4) 26.5 cm

72. The radius of a circle with O center is 10 cm, PQ and PR are the chords of 12 cm. PO, cuts the chord QR at point S. What is the length of OS?

(1) 3.2 cm (2) 2.8 cm
(3) 3 cm (4) 2.5 cm

73. The table shows the production (in thousands) of different types of cars.

Year/ Cars	2012	2013	2014	2015	2016
A	30	35	48	45	56
B	42	48	40	38	56
C	48	36	38	35	44
D	51	24	30	46	54
E	20	42	40	35	43

The number of years in which the production of B type cars occurred in all the years is less than the average production of D type cars is as follows:

(1) 2 (2) 3
(3) 1 (4) 4

74. If 120 is reduced by x%, the same result will be obtained if 40 is increased by x%. Then x% of 210 will be what percentage less than (x + 20)% of 180?

(1) 18 (2) $16\frac{2}{3}$
(3) 20 (4) $33\frac{1}{3}$

75. After giving two successive discounts each of x% on the marked price of an item, total discount is ₹ 259.20. If the face value of the object is ₹ 720, what will be the value of x?

(1) 25 (2) 24
(3) 18 (4) 20

PART-IV (ENGLISH LANGUAGE)

76. Given below are four jumbled sentences. Select the option that gives their correct order.

A. The cafe's owner says he's interested in conservation and hopes customers will realise the animals are worth saving, even though they often have a bad reputation.

B. None of them are venomous, meaning customers can get up close and personal with the reptiles.

C. Here you sip your drink in the company of 35 snakes.

D. This cafe, which has just opened in Tokyo, is not for the faint-hearted.

(1) DCBA (2) ABCD
(3) DBCA (4) ABDC

77. In the sentence, identify the segment which contains the grammatical error. We had to decline several orders in case that the production was held up due to labour strike.

(1) in case that
(2) due to labour strike
(3) the production was held up
(4) We had to decline

78. Select the wrongly spelt word—

(1) Callous (2) Career
(3) Calander (4) Carriage

79. Select the most appropriate meaning of the given idiom.

At daggers drawn

(1) Deceiving somebody
(2) Bitterly hostile
(3) Friendly with each other
(4) Without hope

80. Select the word which means the same as the group of words given.

A person, animal or plant much below the usual height

(1) Creature (2) Witch
(3) Wizard (4) Dwarf

81. Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution in required, select 'No improvement'.

If you park your car here, the traffic police <u>has fined you.</u>

(1) fine you
(2) will fine you
(3) fined you
(4) No improvement

82. Select the most appropriate word to fill in the blank.

His company has the ..... of producing the best cricket balls in the country.

(1) brand (2) opinion
(3) position (4) reputation

83. Select the antonym of the given word.

Scarce

(1) Seldom (2) Scanty
(3) Few (4) Plentiful

Directions (84–88): In the following passage, some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.

PASSAGE

Seoul's city government is asking people for help to correct poorly translated street signs with prizes on offer for ...**(84)**... who spot the most errors. It's running ...**(85)**... two-week campaign calling on Koreans and foreigners ...**(86)**... to keep their eyes peeled for ...**(87)**... in English, Japanese and Chinese text, the Korea Times reports. There's a ...**(88)**... focus on public transport signs, maps and information signs at historic sites, as part of a drive to improve the experience of foreign tourists in the South Korean capital.

84. (1) that (2) those
(3) these (4) this

85. (1) a (2) one
(3) an (4) the

86. (1) alike (2) similarly
(3) likely (4) same

87. (1) blunder (2) mistakes
(3) guffaws (4) oversight

88. (1) particular (2) important
(3) signifying (4) meticulous

89. Select the synonym of the given word.

Chronic

(1) Persistent (2) Common
(3) Ordinary (4) Temporary

90. Select the most appropriate word to fill in the blank.

Around sixty bands in colourful ..... took part in the Notting Hill Carnival.
(1) clothings (2) costumes
(3) apparels (4) dressing

91. Given below are four jumbled sentences. Select the option that gives their correct order.
A. An environmental group performed a necropsy on the animal and found about 40 kilograms of plastic, including grocery bags and rice sacks.
B. A 4.7-metre long whale died on Saturday in Philippines where it was stranded a day earlier.
C. "It's very disgusting and heartbreaking," he said. "We've done necropsies on 61 dolphins and whales in the last 10 years and this is one of the biggest amounts of plastic we've seen."
D. "The animal died from starvation and was unable to eat because of the trash filling its stomach," said Darrell Blatchley, Director of D' Bone Collector Museum Inc.
(1) BACD (2) BADC
(3) ABCD (4) DABC

92. Select the wrongly spelt word—
(1) Exploite (2) Explode
(3) Explicit (4) Expire

93. Select the antonym of the given word.
Expansion
(1) Extension (2) Inflation
(3) Compression (4) Augmentation

94. Select the word which means the same as the group of words given.
A student who idly or without excuse absents himself/herself from school.
(1) Vagrant (2) Itinerant
(3) Migrant (4) Truant

95. Select the correct active form of the given sentence.
Every passing vehicle was being thoroughly checked by the guards.
(1) The guards have been thoroughly checking every passing vehicle.
(2) Every passing vehicle were thoroughly checking the guards.
(3) The guards have thoroughly checked every passing vehicle.
(4) The guards were thoroughly checking every passing vehicle.

96. Select the correct passive form of the given sentence.
Do not buy medicines without the doctor's prescription.
(1) Medicines could not be bought without the doctor's prescription.
(2) Medicines need not be bought without the doctor's prescription.
(3) Medicines should not be bought without the doctor's prescription.
(4) Medicines might not be bought without the doctor's prescription.

97. Select the most appropriate meaning of the given idiom.
To play ducks and drakes
(1) To use recklessly
(2) To change places
(3) To act cleverly
(4) To be friendly

98. In the sentence, identify the segment which contains the grammatical error.
Cyclone Idai killed at least 157 people in Zimbabwe and Mozambique, although it tore across Southern Africa.
(1) Although
(2) It tore across
(3) At least 157 people
(4) Cyclone Idai killed

99. Select the antonym of the given word.
Coerce
(1) Pressurise (2) Cajole
(2) Leave (3) Enchant

100. Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution in required, select 'No improvement'.
The workers of this textile factory <u>demand higher wages</u> for a long time.
(1) has demanded higher wages
(2) No improvement
(3) demanded higher wages
(4) have been demanding higher wages

Short Answers

1. (4)	**2.** (2)	**3.** (1)	**4.** (3)	**5.** (1)	**6.** (3)	**7.** (4)	**8.** (2)	**9.** (1)	**10.** (3)
11. (1)	**12.** (3)	**13.** (2)	**14.** (2)	**15.** (1)	**16.** (1)	**17.** (2)	**18.** (1)	**19.** (2)	**20.** (1)
21. (1)	**22.** (2)	**23.** (4)	**24.** (4)	**25.** (1)	**26.** (2)	**27.** (1)	**28.** (4)	**29.** (2)	**30.** (3)
31. (2)	**32.** (1)	**33.** (2)	**34.** (1)	**35.** (4)	**36.** (2)	**37.** (1)	**38.** (2)	**39.** (1)	**40.** (2)
41. (1)	**42.** (2)	**43.** (3)	**44.** (1)	**45.** (4)	**46.** (2)	**47.** (3)	**48.** (4)	**49.** (1)	**50.** (4)
51. (2)	**52.** (2)	**53.** (4)	**54.** (3)	**55.** (2)	**56.** (2)	**57.** (1)	**58.** (3)	**59.** (1)	**60.** (1)
61. (4)	**62.** (3)	**63.** (1)	**64.** (4)	**65.** (3)	**66.** (4)	**67.** (2)	**68.** (1)	**69.** (1)	**70.** (2)
71. (1)	**72.** (2)	**73.** (1)	**74.** (2)	**75.** (4)	**76.** (1)	**77.** (1)	**78.** (3)	**79.** (2)	**80.** (4)
81. (2)	**82.** (4)	**83.** (4)	**84.** (2)	**85.** (1)	**86.** (1)	**87.** (2)	**88.** (1)	**89.** (1)	**90.** (2)
91. (2)	**92.** (1)	**93.** (3)	**94.** (4)	**95.** (1)	**96.** (3)	**97.** (1)	**98.** (1)	**99.** (1)	**100.** (4)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (4) $3 \times 4 = 12 \times 2 = 24$
Similarly,
$4 \times 9 = 36 \times 2 = 72$

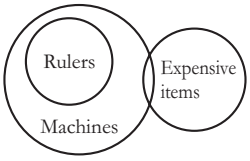
2. (2) Interchange the (+) and (÷) sign
$12 - 8 \div 12 \times 9 + 3$ (applying BODMAS)
or, $12 - 2 \times 3 + 3$
or, $12 - 6 + 3$
or, $15 - 6$
or, 9

3. (1) The series will be,
$3 \times 2 = 6$, $6 + 1 = 7$
$7 \times 2 = 14$, $14 + 2 = 16$
$16 \times 2 = 32$, $32 + 3 = 35$
$35 \times 2 = 70$, $70 + 4 = 74$
$74 \times 2 = 148$, $148 + 5 = 153$

4. (3) Moving in clockwise direction
Cube 1- 1 5 6
Cube 2- 1 3 2
Clearly, 6 is opposite to 2.

5. (1) Advocate helps in provide justice.
Similarly, mediator helps in agreement.

6. (3)



Only conclusion II follows.

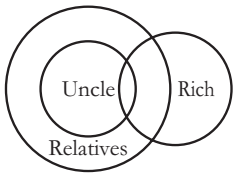
7. (4) The logical order of the words:
Market (C) → Vegetables (D) → Buying (A) → Cook (E) → Food (B)

8. (2) $2A = B + C$, After adding A on both sides,
$2A + A = A + B + C$
$3A = A + B + C$
$3A = ₹\ 1875$
$A = ₹\ 625$
$4B = A + C$
After adding B on both sides
$4B + B = A + B + C$
$5B = ₹\ 1875$
$B = ₹\ 375$
$C = ₹\ 1875 - (₹\ 625 + ₹\ 375)$
$C = ₹\ 1875 - ₹\ 1000$
$C = ₹\ 875$
$C - A = ₹\ 875 - ₹\ 625$
$= ₹\ 250$

9. (1) $6^3 + 1 = 216 + 1 = 217$
$5^3 + 1 = 125 + 1 = 126$
$9^3 + 1 = 729 + 1 = 730$
254 doesn't follow the pattern.

10. (3) bcbabb/bcbabb/bcbabb

11. (1)

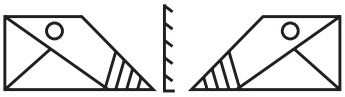


12. (3)
C $\xrightarrow{+3}$ F $\xrightarrow{+3}$ I $\xrightarrow{+3}$ L
G $\xrightarrow{+1}$ H $\xrightarrow{+1}$ I $\xrightarrow{+1}$ J
P $\xrightarrow{+3}$ S $\xrightarrow{+2}$ U $\xrightarrow{+4}$ X
M $\xrightarrow{+2}$ O $\xrightarrow{+2}$ Q $\xrightarrow{+2}$ S

13. (2) The paper is unfolded in 2 steps,
First Step

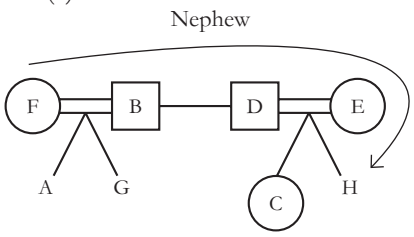
Second Step

14. (2) In a plane mirror, a mirror image is a reflected duplication of an object that appears almost identical, but it is reversed in the direction perpendicular to the mirror surface. As an optical effect it results from reflection of substances such as a mirror or water.

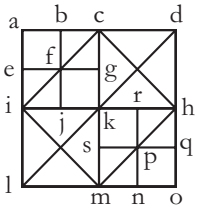


15. (1) $16 - 9 = 7 \times 5 = 35$
Similarly, $36 - 25 = 11 \times 5 = 55$

16. (1)



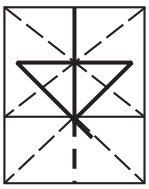
17. (2)



The numbers of squares are :
adol, chmi, abef, bcfg, efij, fgjk, acik, iklm, khmo, pqno, krsp, rhpq, spmn, cdkh.
Total number of squares = 14

18. (1) V I C T O R Y
C I V S Y R O
∴ T R A I T O R
A R T H R O T

19. (2) After observing the options we can see that the figure given under option (2) is indeed embedded in the original figure. It has been represented below,



20. (1) In the above series, the first figure has one horizontal line intersecting 2 vertical lines and the next figure showing its mirror image.
In the 3rd figure, there is two horizontal lines intersecting 3 vertical lines.
So, according to the above sequence, the next figure is:

21. (1) As, encyclopedia is a type of book. Similarly, Python is a type of reptile.

22. (2) $36 = 3 \times 12$
$84 = 7 \times 12$
Similarly,
$27 = 3 \times 9$
$63 = 7 \times 9$

23. (4) C E G I
$\overset{-2}{\downarrow}$ $\overset{+2}{\downarrow}$ $\overset{-2}{\downarrow}$ $\overset{+2}{\downarrow}$
A G E K
Similarly,
D F H J
$\overset{-2}{\downarrow}$ $\overset{+2}{\downarrow}$ $\overset{-2}{\downarrow}$ $\overset{+2}{\downarrow}$
B H F L

24. (4) DIG = 4 + 9 + 7
= 20 + 5 = 25
CUT = 3 + 21 + 20
= 44 + 5 = 49
∴ KICK = 11 + 9 + 3 + 11
= 34 + 5 = 39

25. (1) Except *peanut,* all the three are the types of ingredients used in making vegetables.

Hence, the odd word is option (1).

Part-II
(General Awareness)

26. (2) France is the first country to implement GST in 1954. Most European countries introduced GST back in the 1970s-80s. China implemented GST in 1994 while Russia did it in 1991. The only major economy that does not have GST is USA.

27. (1) Sundari is a small or medium-sized evergreen tree which is found in the inland zone of mangrove forests in India. The Botanical name of Sundari is Heritiera littoralis ait. In India, the tree is found in the inland zone of mangrove forests along the coasts of peninsular India, the Sundarbans in the West Bengal state and the Andaman Islands it is often planted in gardens.

28. (4) In chemistry, catenation is the bonding of atoms of the same element into a series called a chain. Catenation occurs most readily with carbon, which forms covalent bonds with other carbon atoms to form longer chains and structures.

29. (2) The 38th Gee Bee Boxing Tournament was held at Helsinki, Finland. The only gold medal for India was won by Kavinder Singh Bisht. He won against Indian counterpart Mohammed Hussamuddin in summit clash in the 56kg category.

30. (3) The Olympic Council of Asia (OCA) has decided to reintroduce Cricket in the 2022 Asian Games to be held at Hangzhou, China. Earlier, Cricket had featured in 2010 and 2014 Asian Games but was dropped from the 2018 Asian Games.

31. (2) The Wadiyar dynasty is an Indian Hindu dynasty that ruled the Kingdom of Mysore from 1399 to 1947. The dynasty was established in 1399 by Yaduraya Wodeyar. He ruled Mysore under the Vijayanagara Empire until 1423. After Yaduraya Wodeyar, the Mysore kingdom was succeeded by the Wadiyar rulers. The kingdom remained fairly small during this early period and was a part of the Vijayanagara Empire.

32. (1) The Malimath Committee gave 158 recommendations, but these were not implemented by the successive government recommendations of the committee.

It is the duty of the state to protect the fundamental rights of all citizens.

The Committee recommended for the review and re-enactment of the IPC, CrPC (Criminal Procedure Code) and Evidence Act and these laws should take a holistic view in respect to punishment, assestability and bailability.

33. (2) Rani Durgavati died fighting against Mughals while defending Garha Katanga in 1564.

Rani Durgavati Madavi was a ruling Queen of Gondwana from 1550 until 1564. She was born in the family of Chandel King Keerat Rai. She was born at the fort of Kalinjar.

34. (1) Butane or C_4H_{10} has two structural isomers called normal butane and isobutane, or i-butane.

According to IUPAC nomenclature, these isomers are called butane and 2-methylpropane.

35. (4) TISCO was started in 1907.

In 1907, Tata Team finally chooses Sakchi village in present-day Jharkhand, which has since grown into the steel town of Jamshedpur.

36. (2) According to economist intelligence unit report 2019, the most cheap cities in India are Bengaluru, Delhi and Chennai.

37. (1) The 33rd edition of India-Indonesia coordinated patrol (IND-INDO CORPAT) was inaugurated at Port Blair, Andaman & Nicobar Islands.

The IND-INDO CORPAT, 2019 was held from 19 March to 04 April, 2019.

Navies of both the countries have been carrying out coordinated patrolling twice a year since 2002 in an effort to keep the Indian Ocean Region (IOR) safe and secure for commercial shipping and international trade.

38. (2) The Chham Dance is a vibrant masked and costumed ritual with roots in Buddhism. The ritual is performed for the greater good of humanity, destruction of bad spirits and for moral instruction to viewers.

39. (1) Veeraswami Ramaswami was a judge of the Supreme Court of India and the first judge against whom removal proceedings were initiated in independent India.

40. (2) A matalloid is a chemical element that exhibits some properties of metals and some of non-metals. Boron, Silicon, Germanium, Arsenic, Antimony, Tellurium and Polonium are Metalloids.

41. (1) Dry ice is the common name for solid carbon dioxide (CO_2). It gets this name because it does not melt into a liquid when heated; instead, it changes directly into a gas (This process is known as sublimation).

42. (2) In 1025 AD, Somnath Temple was destroyed and plundered by the Afghan ruler, Mahmud of Ghazni. The

temple was dedicated to Lord Shiva, was rebuilt by the Paramara king Bhoja of Malwa and the Solanki king Bhimdev I of Anhilwara between 1026 and 1042 AD.

43. (3) Puducherry will have its first woman Director General of Police (DGP) with S. Sundari Nanda being appointed to the top post in 2019. She is a 1988 batch police officer belonging to the AGMU cadre, has been transferred from National Capital Territory of Delhi (NCTD) and posted as Director General of Police (DGP) of Union Territory of Puducherry.

44. (1) The iron ore deposits are found in Badampahar mines of Odisha and Kudremukh deposits of Karnataka. In Badampahar, high-grade hematite ores are found.

45. (4) Facebook, Inc. is an American online social media and social networking service company based in California. It was founded by Mark Zuckerberg. It acquired Instagram, WhatsApp, Oculus and GrokStyle and independently developed Facebook Messenger, Facebook Watch and Facebook Portal.

46. (2) Indian National Association was the first declared Nationalist Organisation founded in British India by Surendranath Banerjee and Anand Mohan Bose in 1876. It was originally established as Bharat Sabha and held its first annual conference in Calcutta. It merged in INC in 1885.

47. (3) Thoda is a sports dance belonging to Sikkim. It is a game of archery where the target is a dancing human, is played between two teams called pasha and saatha who identify themselves as descendants of Pandavas and Kauravas.

48. (4) **Major Tributaries of Krishna are:** Bhima River, Tungabhadra River, Koyna River, Musi River, Malaprabha River, Kundali River, Ghataprabha River, Yerla River and Warna River. Krishna River originates in the Western Ghats and conjoins the sea in the Bay of Bengal at Hamasaledevi in Andhra Pradesh. It flows through the states of Maharashtra, Karnataka and Andhra Pradesh.

49. (1) J.J. Thomson, an English physicist who helped revolutionise the knowledge of atomic structure by his discovery of the electron (1897). He received the Nobel Prize for Physics in 1906 and was knighted in 1908.

50. (4) Pramod Pandurang Sawant is an Indian politician who is the 13th and current Chief Minister of Goa.

PART-III (QUANTITATIVE APTITUDE)

51. (2) $2 \times 3 \div 2$ of $3 \times 2 \div (4 + 4 \times 4) \div 4$ of $4 - 4 \div 4 \times 4$

$= 2 \times 3 \div 6 \times 2 \div (4 + 4 \times 4 \div 16 - 1 \times 4)$

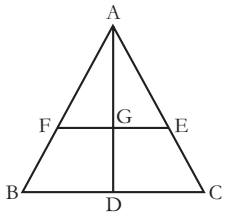
$= 2 \times \frac{3}{6} \times 2 \div \left(4 + 4 \times \frac{4}{16} - 4\right)$

$= 2 \div (4 + 1 - 4)$

$= 2 \div 1$

$= 2$

52. (2)



Since, EF||BC

$$\frac{AF}{FB} = \frac{AG}{GD} = \frac{AE}{EC}$$

$$\Rightarrow \quad \frac{AF}{AB} = \frac{AG}{AD} = \frac{AE}{AC}$$

Also, $\Delta ABC \sim \Delta AFE$

$$\frac{\text{Area}(\Delta ABC)}{\text{Area}(\Delta AFE)} = \frac{AD^2}{AG^2}$$

$$\frac{AD^2}{AG^2} = \frac{2 \times \text{Area}(\Delta AFE)}{\text{Area}(\Delta AFE)}$$

$$\frac{AD}{AG} = \frac{\sqrt{2}}{1}$$

$$\frac{AD}{AG} - 1 = \frac{\sqrt{2}}{1} - 1$$

$$\frac{DG}{AG} = \frac{(\sqrt{2} - 1)}{1}$$

53. (4) The truck at speed = v km/h takes t hrs and at speed $(v - 16)$ km/h it takes $(t + 2)$ hrs.

Then,

$$384\left(\frac{1}{t} - \frac{1}{t+2}\right) = v - (v - 16)$$

$$384\left(\frac{t + 2 - t}{t(t+2)}\right) = 16$$

$$24 \times \frac{2}{t(t+2)} = 0$$

$$t^2 + 2t - 48 = 0$$

$$(t + 8)(t - 6) = 0$$

$$t = 6$$

$$\text{Original Speed} = \frac{384}{6}$$

$$= 64 \text{ km/h}$$

75% of Original Speed

$$= 64 \times \frac{75}{100}$$

$$= 48 \text{ km/h}$$

54. (3) Production of B type car in 2012, 2014 and 2015

$= 42 + 40 + 38 = 120$ thousand

Production of A type car in 2013 and 2016 $= 35 + 56 = 91$ thousand

$$\text{Required \%} = \frac{120 - 91}{91} \times 100$$

$= 31.86 \approx 31.9\%$

55. (2) Sum of twelve numbers $= 12 \times 42 = 504$

Sum of last five numbers $= 5 \times 40 = 200$

Sum of first four numbers $= 4 \times 44 = 176$

Sum of 5^{th}, 6^{th} and 7^{th} numbers $= 504 - (200 + 176)$

$= 504 - 376$

$= 128$

5^{th}, 6^{th} and 7^{th} numbers are $(x + 6)$, x and $(x + 5)$. Then,

$x + 6 + x + x + 5 = 128$

$3x = 128 - 11$

$$x = \frac{117}{3} = 39$$

Average of 5^{th} and 7^{th} number

$$= \frac{x + 6 + x + 5}{2}$$

$$= \frac{39 + 39 + 11}{2}$$

$$= \frac{89}{2} = 44.5$$

56. (2) Total production of E type cars throughout the given years

$= 20 + 42 + 40 + 35 + 43$

$= 180$ thousand

Required angle

$= \frac{42}{180} \times 360°$

$= 42 \times 2°$

$= 84°$

57. (1) $\frac{2 + \tan^2\theta + \cot^2\theta}{\sec\theta \operatorname{cosec}\theta}$

$= \frac{1 + \tan^2\theta + 1 + \cot^2\theta}{\sec\theta \operatorname{cosec}\theta}$

$= \frac{\sec^2\theta + \operatorname{cosec}^2\theta}{\sec\theta \operatorname{cosec}\theta}$

$= \sec\theta \sin\theta + \operatorname{cosec}\theta \cos\theta$

$= \frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{\sin\theta}$

$= \frac{\sin^2\theta + \cos^2\theta}{\sin\theta\cos\theta}$

$= \frac{1}{\sin\theta\cos\theta}$

$= \sec\theta \operatorname{cosec}\theta$

58. (3) Ages of A and B four years ago

$= 4x$ and $5x$

$$\frac{4x + 4 + 8}{5x + 4 + 8} = \frac{11}{13}$$

$$55x - 52x = 156 - 132$$

$$3x = 24$$

$$x = 8$$

Sum of the present ages of A and B

$= 4x + 4 + 5x + 4$

$= 9x + 8$

$= 72 + 8$

$= 80$

59. (1) $4 - 2\sin^2\theta - 5\cos\theta = 0$

$4 - 2(1 - \cos^2\theta) - 5\cos\theta = 0$

$2\cos^2\theta - 5\cos\theta + 2 = 0$

$2\cos^2\theta - 4\cos\theta - \cos\theta + 2 = 0$

$(2\cos\theta - 1)(\cos\theta - 2) = 0$

$\because -1 \le \cos\theta \le 1$

or, $\cos\theta \ne 2$

or, $\cos\theta = \frac{1}{2} = \cos 60°$

or, $\theta = 60°$

$\therefore \sin\theta + \tan\theta = \frac{\sqrt{3}}{2} + \sqrt{3}$

$= \frac{3\sqrt{3}}{2}$

60. (1) Since the given number is divisible by 72, it must be divisible by 4, 8 and 9. Since, it is divisible by 4, last two digit must be divisible by 4. So, possible values of y are 0, 4, 8. Since it is divisible by 8, last three digits must be divisible by 8. As 780 and 788 are not divisible by 8, the only possible value of y is 4. Now, since the number is divisible by 9, its sum of digits will be divisible by 9.

$9 + 8 + 5 + x + 3 + 6 + 7 + 8 + y$

$= 46 + x + y$

$= 46 + x + 4$

$= 50 + x$

For $x = 4$, 54 is divisible by 9.

$4x - 3y = 4 \times 4 - 3 \times 4 = 4$

61. (4) $(x + y + z)^2 = x^2 + y^2 + z^2 + 2(xy + yz + y^2)$

$19^2 = 133 + 2(xy + yz + y^2)$

$2y(x + y + z) = 361 - 133$

$2y \times 19 = 228$

$$y = \frac{228}{38} = 6$$

Now,

$x + z = 19 - y$

$x + z = 19 - 6 = 13$

$x - z = \sqrt{(x + z)^2 - 4xz}$

$= \sqrt{13^2 - 4y^2}$

$= \sqrt{169 - 4 \times 36}$

$= \sqrt{169 - 144} = 5$

62. (3) CP = ₹ 100, then SP = ₹ 85

SP for 9% profit = ₹ 109

Difference in SP = 109 – 85 = 24

When difference = ₹ 24,

then CP = ₹ 100

Difference = ₹ 30.6,

then $CP = 100 \times \frac{30.6}{24}$

$= \frac{3060}{24} = 127.5$

To get 10% profit,

$SP = 127.5 \times \frac{110}{100} = ₹\ 140.25$

63. (1) $12042 = P\left(1 + \frac{r}{100}\right)^6$ ... (i)

$8028 = P\left(1 + \frac{r}{100}\right)^3$

$(8028)^2 = P^2\left(1 + \frac{r}{100}\right)^6$ ... (ii)

Dividing (ii) by (i) we get

$$P = \frac{8028 \times 8028}{12042}$$

$= 5352$

64. (4) Total production of C type cars in year 2013 & A in year 2014

$= 36 + 48 = 84$ thousand

Total production of B in year 2016 & E type cars in 2015

$= 56 + 35 = 91$

Required ratio = 84 : 91

= 12 : 13

65. (3) Edge of the original cube

$= (13824)^{\frac{1}{3}} = 24$

Surface area of the original cube

$= 6(24)^2$

$= 6 \times 576$

$= 3456$

Volume of one smaller cube

edge of one smaller cube

$= (1728)^{\frac{1}{3}} = 12$

Total surface area of three smaller cubes

$= 3 \times 6 \times (12)^2$

$= 18 \times 144$

$= 2592$

Required ratio = 3456 : 2592 = 4 : 3

66. (4) $x^4 + x^{-4} = 194$

$$x^4 + \frac{1}{x^4} = 194$$

$$x^2 + \frac{1}{x^2} = \sqrt{194 + 2} = 14$$

$$x + \frac{1}{x} = \sqrt{x^2 + \frac{1}{x^2} + 2}$$

$$x + \frac{1}{x} = \sqrt{14 + 2} = 4$$

$x^2 - 4x + 1 = 0$

$$x = \frac{4 \pm \sqrt{16 - 4}}{2}$$

$= 2 \pm \sqrt{3}$

$(x - 2)^2 = 3$

67. (2) $\sin\theta = \frac{P^2 - 1}{P^2 + 1}$

$\cos^2\theta = 1 - \sin^2\theta$

$\cos^2\theta = 1 - \frac{(P^2 - 1)^2}{(P^2 + 1)^2}$

$\cos^2\theta = 1 - \frac{P^4 - 2P^2 + 1}{P^4 + 2P^2 + 1}$

$\cos^2\theta = \frac{4P^2}{(P^2 + 1)^2}$

$$\cos\theta = \frac{2P}{P^2+1}$$

68. (1) $\dfrac{(5\sqrt{5}x^3 - 81\sqrt{3}y^3)}{(\sqrt{5}x - 3\sqrt{3}y)}$

$= Ax^2 + By^2 + Cxy$

$\dfrac{(\sqrt{5}x - 3\sqrt{3}y)(5x^2 + 3\sqrt{15}xy + 27y^2)}{\sqrt{5}x - 3\sqrt{3}y}$

$= Ax^2 + 5x^2 + 3\sqrt{15}xy + 27y^2$

$= Ax^2 + By^2 + Cxy$

$A = 5, B = 27, C = 3\sqrt{15}$

$6A + B - \sqrt{15}C = 30 + 27 - 45$

$= 12$

69. (1) Ratio of efficiencies, A:B:C = 2:5:3

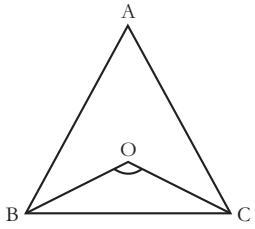
$(A + B + C) : (B + C) = 10 : 8 = 5 : 4$

$$\frac{M_1 \times D_1}{W_1} = \frac{M_2 \times D_2}{W_2}$$

$$\frac{5 \times 27}{1} = \frac{4 \times D_2}{\frac{4}{9}}$$

$$D_2 = \frac{5 \times 27 \times 4}{4 \times 9} = 15$$

70. (2)



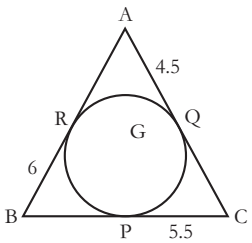
$\angle BOC = 122°$

$\angle BOC = 90° + \frac{1}{2}\angle A$

$122° - 90° = \frac{1}{2}\angle A$

$\angle A = 2 \times 32° = 64°$

71. (1)



AQ = AR = 4.5 cm, PC = CQ = 5.5 cm, BR = BP = 6 cm

Perimeter

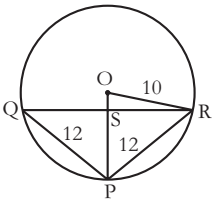
= AB + BC + AC

= AR + BR + BP + PC + AQ + QC

= 4.5 + 6 + 6 + 5.5 + 5.5 + 4.5

= 32 cm

72. (2)



Let OS = x, then

$OR^2 - OS^2 = PR^2 - PS^2$

$10^2 - x^2 = 12^2 - (10 - x)^2$

$100 - x^2 = 144 - 100 - x^2 + 20x$

$20x = 56$

$x = 2.8$ cm

73. (1) Average production of D type cars during the years 2012 to 2016

$$= \frac{51 + 24 + 30 + 46 + 54}{5}$$

$$= \frac{205}{5} = 41$$

In 2014 and 2015 production of B type cars are less than the average.

74. (2) $120\left(1 - \frac{x}{100}\right) = 40\left(1 + \frac{x}{100}\right)$

$$3 - \frac{3x}{100} = 1 + \frac{x}{100}$$

$$\frac{4x}{100} = 2$$

$$x = 50$$

$$x\% \text{ of } 210 = 210 \times \frac{50}{100}$$

$$= 105$$

$$(x + 20)\% \text{ of } 180 = 180 \times \frac{70}{100}$$

$$= 126$$

Required Percentage

$$= \frac{126 - 105}{126} \times 100$$

$$= 16\frac{2}{3}\%$$

75. (4) Two successive discount equivalents to

$$= -x - x + \frac{x^2}{100}$$

$$= -2x + \frac{x^2}{100}$$

Total rate of discount

$$= 259.20 \times \frac{100}{720}$$

$$= 36\%$$

Now,

$$-2x + \frac{x^2}{100} = -36$$

$$x^2 - 200x + 3600 = 0$$

$$\therefore \quad x = 20$$

PART-IV (ENGLISH LANGUAGE)

76. (1) Correct order of the sentences → DCBA

77. (1) Replace 'because' in place of 'in case that' for correct meaning to the sentence.

78. (3) The correct spelling → Calendar.

79. (2) The idiom 'at daggers drawn' means '(of two people) be bitterly hostile towards each other'.

• They have been **at daggers drawn** for weeks over tactics.

80. (4) Meaning of the word 'Dwarf' → A person who is of unusually or abnormally small stature because of a medical condition; a person affected by dwarfism.

81. (2) For the improvement of a sentence, use 'will fine you' in place of 'has fined you'.

82. (4) Correct filler for the blank → Reputation means 'the beliefs or opinions that are generally held about someone or something'.

83. (4) Opposite of Scarce is:

Plentiful: existing in or yielding great quantities; abundant.

84. (2) Appropriate option for the blank → those.

85. (1) A determiner is required to fill in the blank.

An indefinite article 'a' is required because it precedes a word that begins with a consonant sound.

86. (1) The blank needs an adverb, not an adjective. Between 'alike' and 'similarly', 'alike' is the correct choice.

87. (2) 'Mistakes' is the appropriate word to fill in the blank.

88. (1) 'Particular' meaning 'especially great or intense' is the appropriate word for the blank.

89. (1) Chronic/Persistent: (of an illness) persisting for a long time or constantly recurring, continuing to exist or occur over a prolonged period.

90. (2) 'Costumes' meaning 'a set of clothes worn by an actor or performer for a particular role' is the appropriate word for the blank.

91. (2) Correct order of the four jumbled sentences is → BADC.

92. (1) Correct spelling of 'Exploite' is 'Exploit' and it means 'make full use of and derive benefit from a resource'.

93. (3) Antonym of Expansion is:

Compression: the reduction in volume.

94. (4) Truant: a pupil who stays away from school without leave or explanation.

95. (1) Correct active form of the given sentence → The guards were thoroughly checking every passing vehicle.

96. (3) Correct passive form of the given sentence is →

Medicines should not be bought without the doctor's prescription.

97. (1) The idiom 'to play ducks and drakes' means 'to behave recklessly; to idly squander one's wealth'.

Sentence → She played ducks and drakes with her property.

98. (1) The use of conjunction 'although' is incorrect in the sentence. To correct the sentence use 'as' in place of 'although'.

99. (1) Coerce/Pressurise: persuade (an unwilling person) to do something by using force or threats; attempt to persuade (someone) into doing something.

100. (4) The phrase 'for a long time' indicates the duration of some activity which started in past and still continues. Use present/past perfect continuous tense to represent such actions.

❑❑❑

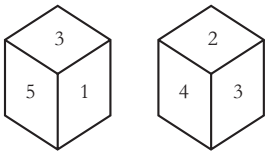
3 SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 04 June, 2019 (II)

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. 10 years ago, the age of a father was more than $3\frac{1}{2}$ the age of his son and after 10 years from now, the age of the father will be more than $2\frac{1}{4}$ the age of his son. Now, how much is the total sum of the age of father and son?
(1) 120 years (2) 115 years
(3) 110 years (4) 100 years

2. Two different situations of the same dice are shown. If the number 6 is on the lower board, then what will be the number on the upper board?



(1) 4 (2) 1
(3) 2 (4) 3

3. Select the set in which the numbers are related in the same way as the numbers are related in the set below.
(10, 18, 38)
(1) (4, 12, 22) (2) (14, 12, 8)
(3) (12, 22, 46) (4) (18, 6, 14)

4. Three from the following four numbers are somehow identical and one number is uneven. Select that uneven number.
(1) 12 (2) 14
(3) 30 (4) 56

5. The way, in which the verb 'deed' is related to 'reaction', ... is related to 'inciting'.
(1) Foresight (2) Feedback
(3) Response (4) Welcome

6. Select the option that is related to the third letter group in the same way as the second letter group is related to the first letter group.
BECD : YUXW : DGEF : ?
(1) WUTV (2) WTVU
(3) VRTS (4) XUWV

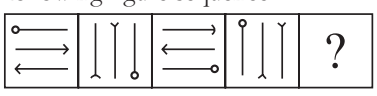
7. From the given options, select the word pair whose two words are related to each other in the same way as the words of the word pair below are related.
Heat : Sun
(1) House : Terrace
(2) Vitamin : Fruit
(3) Environment : Humidity
(4) Ride : Car

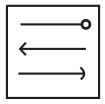
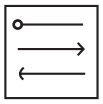
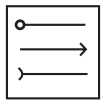
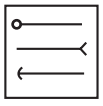
8. If BACK is coded as 11312 and CAKE as 51113. So how will MADE be coded?
(1) 13145 (2) 54113
(3) 51413 (4) 31145

9. To correct the equation given below, which two symbols, should be mutated?
$18 + 6 - 6 \div 3 \times 6 = 6$
(1) + and ÷ (2) + and ×
(3) – and ÷ (4) + and –

10. Three words out of the following four words are somehow similar and one word is uneven. Choose the odd word.
(1) Tendency (2) Endurance
(3) Stability (4) Persistence

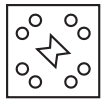
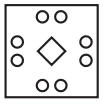
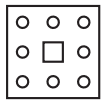
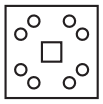
11. Select the next figure in the following figure sequence.



(1)  (2) 
(3)  (4) 

12. In the series given below, what number will replace the question mark (?)?
2, 5, 11, 23, 44, ?
(1) 77 (2) 63
(3) 51 (4) 66

13. A paper is folded and cut as shown below. What will it look like when open it?

(1)  (2) 
(3)  (4) 

14. Select the option in which the given figure is hidden.

(1)  (2) 
(3)  (4) 

15. Arrange the following words in a logical and meaningful sequence.

(1) Medicine
(2) Disease identification
(3) Consultation
(4) Disease
(5) Health Benefits
(6) Doctor
(1) 4, 6, 3, 2, 1, 5
(2) 2, 6, 4, 1, 3, 5
(3) 4, 6, 2, 3, 1, 5
(4) 4, 6, 1, 3, 2, 5

16. Select the letter combination that is placed sequentially on the blank spaces of the letter series given below to complete the given series.
ac_d_b_cbdd_a_bddb
(1) bdbca (2) bdcab
(3) cbdbc (4) bdabc

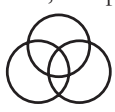
17. Three letter groups from the following four-letter groups are similar in some way and one is unequal. Select the odd alphabets.
(1) TWUV (2) HNLJ
(3) MSOQ (4) DGEF

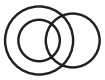
18. Two statements are given below and then conclusions, I, II and III are given. Assuming the statement to be true, even if it seems to be at variance from commonly known facts, you have to decide which of the given conclusions logically follows the given statements.

Statement:
Some cars are vehicles.
No vehicle is four wheeler.

Conclusions:
I. There are no cars that are four wheeler.
II. All four wheelers are cars.
III. Some vehicles are cars.
(1) Both conclusions I and II follow.
(2) Both the conclusions II and III follow.
(3) Only conclusion II follows.
(4) Only conclusion I follows.

19. Identify the diagram that best represents the relationship among the given classes.
Parents, rich people, farmers

(1)  (2) 

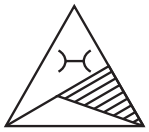
(3)  (4) 

20. P is father of Q and grandfather of R. R is brother of S. The mother of S is married to V. T is sister of Q. How is V related to P?
(1) Son
(2) Nephew
(3) Brother-in law
(4) Son-in-law

21. In a code language, TEMPLE is written as DKOLDS. In the same code language, how will be WORSHIP written as .....?
(1) OHGRQNV
(2) OGHQRVN
(3) QJITSPX
(4) VNQGHOR

22. Select the set in which the numbers are interlinked in the same way as the numbers are related in the set given below:
(7, 13, 21)
(1) (12, 18, 25) (2) (17, 22, 30)
(3) (9, 16, 25) (4) (2, 8, 16)

23. If the mirror is placed on the right side of the diagram given below, then select the right mirror image to be made.

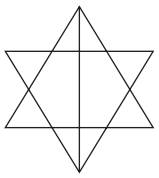


(1)  (2) 

(3)  (4) 

24. Select the number pair in which the two numbers are related in the same way as the two numbers are related in the number pair given below.
4 : 32
(1) 10 : 160 (2) 8 : 248
(3) 6 : 108 (4) 5 : 62

25. How many triangles are there in the given figure?



(1) 18 (2) 16
(3) 14 (4) 20

PART-II
(GENERAL AWARENESS)

26. How many great powers (Mahajanapada) existed in the seventh and sixth centuries BCE during the life of Lord Gautama Buddha?
(1) 11 (2) 13
(3) 17 (4) 16

27. Which of the following Articles of the Constitution of India is related to the Uniform Civil Code?
(1) Article 44 (2) Article 46
(3) Article 45 (4) Article 43

28. Name the first female Prime Minister of the world.
(1) Indira Gandhi
(2) Sirimavo Bandaranaike
(3) Golda Meir
(4) Elizabeth Domitien

29. Which panel set up by the Government of India has suggested the removal of complete control over Chinese industry?
(1) Krishna Panel
(2) Rangarajan Panel
(3) Ramsevak Panel
(4) Radheshyam Panel

30. Where was the inauguration of Special Olympics World Games, 2019 held?
(1) Abu Dhabi (2) Sweden
(3) Germany (4) Austria

31. Which is the traditional musical instrument of Limbu community of Sikkim?
(1) Chutke (2) Naumati
(3) Chyabrung (4) Gyurum Sili

32. In March 2019, Social Media Platforms and Internet and Mobile Association of India (IAMI)

introduced ..... to the Election Commission of India for the general elections in 2019.
(1) Voluntary Code of Conduct
(2) Precautionary Code
(3) List of jobs to be done
(4) Polling List Center

33. Name the passage which is used by pilgrims in Uttarakhand for Kailash-Mansarovar Yatra.
(1) Pensy La (2) Kurdung
(3) Banihal Pass (4) Lipulekh

34. Which of the following forms is an epithet of buckminister fullerene?
(1) Phosphorus (2) Iron
(3) Carbon (4) Boron

35. Which of the following is aldehyde?
(1) Propine (2) Propanone
(3) Propenal (4) Propanol

36. Name the gland that controls the functioning of other endocrine glands.
(1) Pancreas (2) Adrenal gland
(3) Renal gland (4) Pituitary gland

37. Which of the following is not one of the monarchy states that existed in India in the seventh and early sixth centuries BC?
(1) Magadha (2) Vaishali
(3) Avanti (4) Kosala

38. Who was the first woman general secretary of SAARC (South Asian Association for Regional Cooperation)?
(1) Antino Guteres
(2) Jeremiah Nymanne Kingsley
(3) Madeleine Albright
(4) Fathimath Dhiyana Saeed

39. Which of the following was the Precursor of the Internet?
(1) APNET (2) ANET
(3) ARPANET (4) PANET

40. Which team won the Ranji Trophy final in 2017?
(1) Vidarbha (2) Punjab
(3) Mumbai (4) Delhi

41. Which of the following biosphere reserves was first established by the Government of India?
(1) Sundarbans Biosphere Reserve
(2) Gulf of Mannar Biosphere Reserve
(3) Nanda Devi Biosphere Reserve
(4) Eucalyptus Biosphere Reserve

42. Name the state of the following which Chandragupta I had got in the dowry from Lichhavi.
(1) Pataliputra (2) Prayag
(3) Saket (4) Ujjain

43. Who was the founder of the Chalukya dynasty?
(1) Pulakeshin I
(2) Kirtivarman
(3) Narasimhavarman
(4) Mangalsa

44. Which of the following public sector undertakings was given the Maharatna status in February 2013?
(1) ONGC (2) BHEL
(3) CIL (4) OIL

45. In which year was Project Tiger launched in India?
(1) 1982 (2) 1992
(3) 1979 (4) 1973

46. ..... is collective folk dance which is done in honour of Kanchenjunga, the Patron God of the people of Sikkim.
(1) Jo-Mal-Lok
(2) Tendon Low Rum Fat
(3) Chu-Faat
(4) Kinchum-Chu-Bomsa

47. Which of the following has a very strong aroma of the fruit?
(1) Methanol
(2) Ethyl acetate
(3) Methyl chloride
(4) Methanoic acid

48. "What is the name of the first Indian budget carrier to join the International Air Transport Association (IATA)?
(1) Indigo (2) Spice jet
(3) Go Air (4) Jet Airways

49. The idea of residual powers in the Indian Constitution is derived from the ..... Constitution.
(1) South Africa (2) America
(3) Canada (4) Japan

50. Which of the following states passed the Maintenance of Household Registers Bill in March 2019?
(1) Odisha (2) Assam
(3) Mizoram (4) West Bengal

PART-III
(QUANTITATIVE APTITUDE)

51. $\left(\frac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta}\right) + 1$, $\theta \neq 45°$, is equal to
(1) $\sec^2\theta$ (2) $2\tan^2\theta$
(3) $\text{cosec}^2\theta$ (4) $\cot^2\theta$

52. Raju's income is 20% more than his expenditure. If his income increases by 60% and his expenditure increase by 70%, then what percentage of the savings will increase/decrease?
(1) will decrease 2%
(2) will decrease 10%
(3) will increase 10%
(4) will increase 2%

53. The ratio of competencies A, B and C is 4 : 5 : 3. On working together, all three of them complete work in 25 days. In how many days will both A and C together complete 35% of the work?
(1) 18 days (2) 15 days
(3) 12 days (4) 10 days

54. Renu bought an item for ₹ 1,240 and sold it at a loss of 25%. With that amount, she bought another item and sold it for 40% profit. What percentage of profit did Renu get?
(1) 12 (2) 5
(3) $6\frac{2}{3}$ (4) 15

55. The table shows the production (in thousands) of different types of cars.

Years/ Cars	2013	2014	2015	2016	2017
A	35	40	48	50	36
B	39	45	54	60	72
C	52	25	32	54	45
D	50	42	45	46	47
E	36	46	48	48	55

The total production of A type cars in year 2015 and C type cars in 2013 is approximately what percent of

the total production of D type cars in five years?

(1) 42.4 (2) 42.8
(3) 43.5 (4) 40.2

56. The table shows the production (in thousands) of different types of cars.

Years/ Cars	2013	2014	2015	2016	2017
A	35	40	48	50	36
B	39	45	54	60	72
C	52	25	32	54	45
D	50	42	45	46	47
E	36	46	48	48	55

What is the ratio of total production of C and E type cars in the year 2013 to D in 2014 and 2016 and total production of E type cars in 2017?

(1) 8 : 13 (2) 8 : 11
(3) 13 : 32 (4) 5 : 8

57. Circles of radius 10 cm and 8 cm cut each other at points P and Q. PQ = 12 cm and the distance between the centres of the circle is x cm, then the value of x (correct to 1 decimal place):

(1) 14.8 (2) 12.8
(3) 13.9 (4) 13.3

58. The nominal value of an article is 315. It is sold in 288. If this leads to a loss of 4%, then what percentage of the item was marked more than the cost?

(1) $6\frac{1}{2}$ (2) 5
(3) $5\frac{1}{2}$ (4) 8

59. A takes 30 minutes longer than B to cover a distance of 15 km at a certain speed. However, if A doubles his speed, he covers the same distance in an hour less time than B. What is the speed of B (in km/h)?

(1) 5 (2) 6
(3) $6\frac{1}{2}$ (4) $5\frac{1}{2}$

60. The average weight of some students in a class is 68.5 kg. If four new students of 72.2 kg, 70.8 kg, 70.3 kg, 66.7 kg are enrolled in the class, the average weight of students increases to 300 g. Initially, how many students were there in the class?

(1) 11 (2) 26
(3) 21 (4) 16

61. If $16x^2 + 9y^2 + 4z^2 = 24\ (x - y + z) - 61$, then the value of $(xy + 2z)$ will be:

(1) 1 (2) 2
(3) 5 (4) 3

62. If x is subtracted from each of 23, 39, 32 and 56, then the numbers obtained in this sequence are in proportion. What will be the mean proportional between $(x + 4)$ and $(3x + 1)$?

(1) 10 (2) 15
(3) 14 (4) 12

63. If $[8(x + y)^3 - 27(x - y)^3] \div (5y - x) = Ax^2 + Bxy + Cy^2$, then, value of (A + B + C) will be:

(1) 26 (2) 19
(3) 13 (4) 16

64. A circle under a triangle ABC, whose center O is created. On increasing AO, it meets the circle on K and AD ⊥ BC. If ∠B = 80° and ∠C = 64° then the measure of ∠DAK is:

(1) 10° (2) 12°
(3) 20° (4) 8°

65. In ΔABC, AD ⊥ BC and BE ⊥ AC. AD and BE cut each other at F. If BF = AC, what will be the measure of ∠ABC?

(1) 60° (2) 45°
(3) 50° (4) 70°

66. ΔABC is similar to ΔDEF. The area of ΔABC is 100 cm^2 and the area of ΔDEF is 49 cm^2. If ΔABC's altitude is 5 cm, then ΔDEF will have corresponding altitude:

(1) 4.5 cm (2) 6 cm
(3) 7 cm (4) 3.5 cm

67. The table shows the production (in thousands) of different types of cars.

Years/ Cars	2013	2014	2015	2016	2017
A	35	40	48	50	36
B	39	45	54	60	72
C	52	25	32	54	45
D	50	42	45	46	47
E	36	46	48	48	55

In the year 2013, 2014, 2015 and 2017, the total production of B type cars is how much percent less than the total production of all types of cars in the year 2017? (Correct to 1 decimal place).

(1) 15.8 (2) 17.6
(3) 18.2 (4) 18.4

68. The table shows the production (in thousands) of different types of cars.

Years/ Cars	2013	2014	2015	2016	2017
A	35	40	48	50	36
B	39	45	54	60	72
C	52	25	32	54	45
D	50	42	45	46	47
E	36	46	48	48	55

If the figures related to the production of B type cars are represented by a circle diagram (pie chart), then the central angle of the sector showing the production of cars in 2016 will be:

(1) 72° (2) 60°
(3) 96° (4) 80°

69. If $0° < \theta < 90°$ and $\cos^2\theta = 3(\cot^2\theta - \cos^2\theta)$, then the value of $\left(\frac{1}{2}\sec\theta + \sin\theta\right)^{-1}$ will be:

(1) $2(\sqrt{3} - 1)$ (2) $\sqrt{3} + 1$
(3) $\sqrt{3} + 2$ (4) $2(2 - \sqrt{3})$

70. If, $\cos\theta = \frac{2p}{1 + p^2}$ then $\tan\theta$ is equal to:

(1) $\frac{p^2}{1 + p^2}$ (2) $\frac{1 - p^2}{1 + p^2}$
(3) $\frac{2p}{1 - p^2}$ (4) $\frac{1 - p^2}{2p}$

71. The value of $5 \div 5$ of $5 \times 2 + 2 \div 2$ of $2 \times 5 - (5 - 2) \div 6 \times 2$:

(1) $\frac{9}{5}$ (2) 19

(3) $\frac{23}{2}$ (4) $\frac{19}{10}$

72. If the number of eight digits is $789x\ 531y$, the number is divisible by 72, then the value of $(5x - 3y)$ will be:

(1) 0 (2) – 1
(3) 1 (4) 2

73. At a compounded interest rate of 10% per annum, the interest is ₹ 1,623 in $2\frac{1}{2}$ years, when interest is annually combined. What is the amount?

(1) 5,000 (2) 6,000
(3) 7,200 (4) 6,500

74. If $x + y + z = 19$, $xy + yz + zx = 114$, then the value of $\sqrt{x^3 + y^3 + z^3 - 3xyz}$ will be:

(1) 17 (2) 13
(3) 19 (4) 21

75. A rectangular tank measuring 10 m × 8 m × 6 m with a circular hole of one-meter diameter, how much iron sheets (m^2) will be needed to make such a tank? (Correct to 1 decimal place)

(1) 370.4 (2) 371.6
(3) 375.2 (4) 370.8

PART-IV (ENGLISH LANGUAGE)

76. Select the correct passive form of the given sentence.

Do not park your car in front of my house.

(1) My house should not be parked in front of your car.
(2) Your car need not be parked in front of my house.
(3) Your car could not be parked in front of my house.
(4) Your car should not be parked in front of my house.

77. Select the word which means the same as the group of words given.

A person, animal or plant belonging originally to a place.

(1) Occupant (2) Alien
(3) Native (4) Resident

78. Select the antonym of the given word.

Escalate

(1) Raise (2) Enlarge
(3) Reduce (4) Heighten

79. Select the antonym of the given word.

Tender

(1) Rough (2) Warm
(3) Gentle (4) Soft

80. Select the most appropriate word to fill in the blank.

The state government argued that it could not ..... the increase in the teachers.

(1) Spare (2) Get
(3) Stand (4) Afford

81. Given below are four jumbled sentences. Select the option that gives their correct order.

A. That sort of pollution, which is also widespread in other south-east Asian nations, regularly kills wildlife like whales and turtles that ingest the waste.
B. Environmental groups have tagged the Philippines as one of the world's biggest ocean polluters due to its reliance on single-use plastic.
C. In Thailand also, a whale died last year after swallowing more than 80 plastic bags.
D. In the latest case, a whale with 40 kilos of plastic trash in its stomach died on Saturday in southern Philippines where it was stranded a day earlier.

(1) ABCD (2) BADC
(3) DABC (4) BCAD

82. Select the most appropriate word to fill in the blank.

Scientists at Cambridge University are ..... how plants can give us sustainable energy.

(1) scrutinising (2) investigating
(3) inspecting (4) looking

83. Select the wrongly spelt word.

(1) Comparison
(2) Communication
(3) Compitition
(4) Comparable

84. Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution is required, select 'No improvement'.

I <u>look for a better job</u> for the last two months, but nothing is in sight.

(1) have looked for a better job
(2) looked for a better job
(3) have been looking for a better job
(4) No improvement

85. Select the correct active form of the given sentence.

The main gate of the building was being guarded by gun-totting guards.

(1) The main gate of the building were guarding gun-totting guards.
(2) Gun-totting guards were guarding the main gate of the building.
(3) Gun-totting guards have been guarding the main gate of the building.
(4) Gun-totting guards guarded the main gate of the building.

86. In the sentence, identify the segment which contains the grammatical error.

Due to the Cyclone Idai, vast areas of land have been flooded, roads destroyed and communications disrupting in Zimbabwe and Mosambique.

(1) vast areas of land have been flooded
(2) roads destroyed
(3) Due to the Cyclone Idai
(4) and communications disrupting

87. Select the most appropriate meaning of the given idiom.

Costs an arm and a leg

(1) Rarely available
(2) Easy to obtain
(3) Nothing to lose
(4) Very expensive

Directions (88–92): In the following passage, some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.

PASSAGE

An Italian mayor has been cleaning the streets along with his councillors after their town ...**(88)**... with no manual workers, it's reported. In fact ...**(89)**... was sweeping the pizza in front of the ...**(90)**... church in preparation for market day, ...**(91)**... the deputy mayor's father and a town councilor armed with a high-pressure hose. The town Zerfaliu's last ...**(92)**... retired six months ago and nobody has been hired since then. "We can't do anything. We are blocked by bureaucracy," the mayor says.

88. (1) leaves (2) was left
(3) was leaving (4) has left

89. (1) they (2) it
(3) she (4) he

90. (1) next (2) near
(3) neighbour (4) local

91. (1) as well (2) alongside
(3) also (4) along

92. (1) mayor (2) councillor
(3) worker (4) member

93. Given below are four jumbled sentences. Select the option that gives their correct order.

1. Elephant tusks were tracked from the Democratic Republic of Congo for two months.
2. Customs officials in Thailand say it's the biggest seizure in the country's history.
3. Four tonnes of ivory, with a market value of $6 million–it was an impressive haul
4. Officials say they were being transported of Laos, from where they believed the ivory would be sold to customers across Asia.

(1) CBAD (2) ABCD
(3) ACDB (4) CABD

94. Select the wrongly spelt word.
(1) Examplify (2) Example
(3) Exhale (4) Exempt

95. Select the synonym of the given word.
Garrulous
(1) Talkative (2) Concise
(3) Throaty (4) Guttral

96. Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution in required, select 'No improvement'.
If you join this job nob, <u>it proves to be good</u> in the long run.
(1) No improvement
(2) it has proved to be good
(3) it proves good
(4) it will prove to be good

97. In the sentence, identify the segment which contains the grammatical error.
She got two quick promotions in order that she has good communication skills.
(1) two quick promotions
(2) in order that
(3) she has good communication skills
(4) She got

98. Select the most appropriate meaning of the given idiom.
Get out of hand
(1) Get upset
(2) Give up something
(3) Get out of control
(4) To complete a task

99. Select the synonym of the given word.
Tilt
(1) Support (2) Cross
(2) Straighten (3) Slant

100. Select the word which means the same as the group or words given.
A person without a settled home or regular work who wanders from place to place and lives by begging.
(1) Vagrant
(2) Truant
(3) Itinerant
(4) Migrant

Short Answers

1. (3)	**2.** (4)	**3.** (3)	**4.** (2)	**5.** (3)	**6.** (2)	**7.** (2)	**8.** (2)	**9.** (1)	**10.** (1)
11. (2)	**12.** (1)	**13.** (4)	**14.** (4)	**15.** (3)	**16.** (4)	**17.** (2)	**18.** (4)	**19.** (1)	**20.** (4)
21. (1)	**22.** (4)	**23.** (2)	**24.** (3)	**25.** (2)	**26.** (4)	**27.** (1)	**28.** (2)	**29.** (2)	**30.** (1)
31. (3)	**32.** (1)	**33.** (4)	**34.** (3)	**35.** (3)	**36.** (4)	**37.** (2)	**38.** (4)	**39.** (3)	**40.** (1)
41. (4)	**42.** (1)	**43.** (1)	**44.** (2)	**45.** (4)	**46.** (3)	**47.** (2)	**48.** (2)	**49.** (3)	**50.** (3)
51. (1)	**52.** (3)	**53.** (2)	**54.** (2)	**55.** (3)	**56.** (1)	**57.** (4)	**58.** (2)	**59.** (2)	**60.** (4)
61. (3)	**62.** (4)	**63.** (4)	**64.** (4)	**65.** (2)	**66.** (4)	**67.** (2)	**68.** (4)	**69.** (4)	**70.** (4)
71. (4)	**72.** (2)	**73.** (2)	**74.** (3)	**75.** (3)	**76.** (4)	**77.** (3)	**78.** (3)	**79.** (1)	**80.** (4)
81. (2)	**82.** (2)	**83.** (3)	**84.** (3)	**85.** (2)	**86.** (4)	**87.** (4)	**88.** (2)	**89.** (4)	**90.** (4)
91. (2)	**92.** (3)	**93.** (1)	**94.** (1)	**95.** (1)	**96.** (4)	**97.** (2)	**98.** (3)	**99.** (4)	**100.** (1)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (3) Present age of father and son = F and S

According to question,

10 years ago,

$$F - 10 = \frac{7}{2}(S - 10)$$

$$2F - 20 = 7S - 70$$

$$-20 + 60 = 7S - 2F$$

$$7S - 2F = 50 \quad \text{... (i)}$$

10 years from now,

$$F + 10 = \frac{9}{4}(S + 10)$$

$$4F + 40 = 9S + 90$$

$$4F - 9S = 90 - 40$$

$$4F - 9S = 50 \quad \text{... (ii)}$$

On solving both the equations,

S = 30 & F = 80

Sum of their present age

= 80 + 30 = 110 years

2. (4) Moving in the clockwise direction,

Cube 1 - 3 1 5

Cube 2 - 3 4 2

Clearly, 6 will be opposite to 3

3. (3) 10 × 2 = 20 – 2 = 18

18 × 2 + 2 = 36 + 2 = 38

Similarly, the option (3) is related to above number set,

12 × 2 – 2 = 24 – 2 = 22

22 × 2 + 2 = 44 + 2 = 46

4. (2) All except 14, are the multiple of only one prime number.

5. (3) Deed – reaction

Response – inciting

6. (2)

B E C D

Y V X W (opposite letters)

∴ D G E F

W T V U (opposite letters)

7. (2) Sun is the source of heat, in the same way fruit is the source of vitamin.

8. (2) B A C K ↓ 2 1 3 11 and C A K E ↓ 3 1 11 5

⇒ 11312 ⇒ 51113

M A D E

∴ 13 1 4 5

⇒ 54113

9. (1) According to the question,

After interchanging the + and ÷ sign

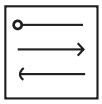
18 ÷ 6 – 6 + 3 × 3 (applying BODMAS)

= 3 – 6 + 9

= 12 – 6 = 6

10. (1) Tendency relates to the ability of a person to do something. While endurance, stability and persistence means the state of being stable.

11. (2) The figure first moves in anti-clockwise direction and then its mirror image shown in the next figure with the outward arrows. In next figure the pattern is same but arrow sign changes to inward.

∴ 

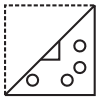
12. (1) 2, 5, 11, 23, 44, (77)

+3, +6, +12, +21, +33

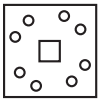
+3, +6, +9, +12

Hence, the correct option is (1).

13. (4) Step-1



Step-2



14. (4) On observing the options, the figure given under option (4) is indeed embedded in the original figure.

15. (3) Disease (4) → Doctor (6) → Disease identification (2) → Consultation (3) → Medicine (1) → Health benefits (5).

16. (4) a c b d d b a c b d d b a c b d d b

17. (2) All except HNLJ has one vowel.

18. (4) 

Conclusion :

I. There are no cars that are four wheeler : (false) as there is no relation between them.

II. All four wheelers are cars : (false) it is a possibility case.

III. Some vehicles are cars : (true) it is clearly shown in the diagram.

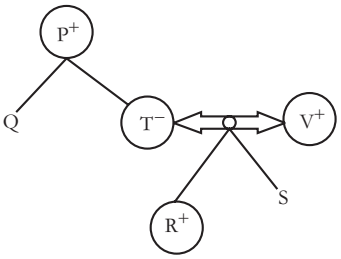
Hence, option (4) is correct.

19. (1) 

Some parents are rich people and vice-versa.

Some rich people are farmers and vice-versa.

Some farmers are both parents and rich people.

20. (4) 

It is clear from the diagram, V is son-in-law of P.

21. (1) T E M P L E

D K O L D S

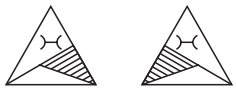
W O R S H I P

O H G R Q N V

22. (4) 7 $\xrightarrow{+6}$ 13 $\xrightarrow{+8}$ 21

∴ 2 $\xrightarrow{+6}$ 8 $\xrightarrow{+8}$ 16

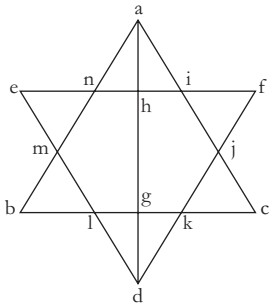
23. (2) In a plane mirror, a mirror image is a reflected duplication of an object that appears almost identical, but it is reversed in the direction perpendicular to the mirror surface. As an optical effect it results from reflection of substances such as a mirror or water.



24. (3) $(4)^2 \times \frac{4}{2} = 16 \times 2 = 32$

$\therefore\ (6)^2 \times \frac{6}{2} = 36 \times 3 = 108$

25. (2)



The triangles formed = abc, def, mne, bml, kdl, ckj, fji, ani, ahi, anh, dkg, gdi, dhe, dhf, abg, agc.

$\therefore$ Number of triangles = 16

PART-II (GENERAL AWARENESS)

26. (4) During the time of 6th-7th centuries B.C., there were total 16 Janapadas existing throughout the country.

These were Kasi, Kosala, Anga, Magadha, Vajji, Malla, Chedi, Vatsa, Kuru, Panchala, Machcha, Surasena, Assaka, Avanti, Gandhara and Kamboja. In the Budhist traditions, these kingdoms came to be known as 'Mahajanapadas'.

27. (1) **Article 44 deals with Uniform Civil Code:** It is mentioned under Directive Principles of State Policy. It is not justiciable. It says that the State shall endeavour to secure for the citizens a uniform civil code throughout the territory of India.

28. (2) **Sirima Ratwatte Dias Bandaranaike** was the world's first non-hereditary female head of government in modern history. She was elected Prime Minister of Sri Lanka in 1960. She served three terms: 1950–1965, 1970–1977 and 1994–2000.

29. (2) The committee, led by C. Rangarajan, Chairman of the Prime Minister's Economic Advisory Council, pitches for a stable trade policy and a moderate duty on imports and exports, but wants outright ban or quantitative restrictions done away with.

30. (1) The inauguration of Special Olympics World Games, 2019 was held in Abu Dhabi, United Arab Emirates from 14–21 March, 2019. The Indian team comprising 284 athletes clinched 85 gold, 154 silver and 129 bronze medals at the Special Olympics World Summer Games.

31. (3) Chyabrung's also called kay/ke. It is a traditional drum of the Rai and Limbu community in Nepal, Sikkim and North-East India.

32. (1) The social media intermediary members of the Internet and Mobile Association of India (IAMAI) have recently adopted a voluntary code of ethics for the upcoming general elections.

33. (4) Lipulekh is a Himalayan pass on the border between Uttarakhand, India and Tibet, China. The pass is used for pilgrimage of Kailash Mansarover.

34. (3) Bulkminister Fullerene is an allotrope of carbon. It comprises C-50, C-60 carbon atoms. It contains pentagonal and hexagonal carbon cycles arranged in a football shape. It is a radical scavenger and also has vital applications in nano technology.

35. (3) **Propenal is an aldehyde:** The names of aldehyde groups generally end with 'al'.

36. (4) Pituitary gland is also known as master gland because it controls the functioning of other glands. It is about the size of a pea and is situated in a bony hollow, just behind the bridge of your nose. It is attached to the base of your brain by a thin stalk.

37. (2) Vaishali was not among the 16 janapadas present during the 7^{th} century B.C. During the time of 6^{th}-7^{th} century B.C., there were total 16 janapadas were existing throughout the country. These were Kasi, Kosala, Anga, Magadha, Vajji, Malla, Chedi, Vatsa, Kuru, Panchala, Machcha, Surasena, Assaka, Avanti, Gandhara and Kamboja.

38. (4) The former Maldivian Attorney-General, Fathimath Dhiyana Saeed, was the first female secretary general of SAARC. SAARC is a regional Asian group founded in 1985, which has 7 members.

39. (3) ARPANET was the network that became the basis for the Internet. Based on a concept first published in 1967, ARPANET was developed under the direction of the U.S. Advanced Research Projects Agency (ARPA). In 1969, the idea became a modest reality with the interconnection of four university computers.

40. (1) Vidarbha won the Ranji Trophy final in 2017. The final took place between Vidarbha and Saurashtra, starting on 3^{rd} February, 2019. Vidarbha defeated Saurashtra by 78 runs in the final to become the sixth team in the tournament's history to retain their title.

41. (4)

Biosphere Reserves	**Year**
Eucalyptus Biosphere Reserve	1986
Sunderbans	1989
Nanda Devi National Park & Biosphere Reserve	1988
Gulf of Mannar	1989

42. (1) Chandragupta I got Pataliputra in dowry from the Lichhavis. The Gupta-Lichchhavi relation was even publicised through a particular type of gold coins 'which have the names and figures of Chandragupta I and his Lichchhavi wife on the obverse and the figure of a goddess seated on a lion along with the legend Lichchhavayah on the reverse'.

43. (1) The Chalukya dynasty was established by Pulakeshin I in 543. Pulakeshin I took Vatapi (modern Badami in Bagalkot district, Karnataka) under his control and made it his capital.

Pulakeshin I and his descendants are referred to as 'Chalukyas of Badami'.

44. (2) The government in 2013 had granted Maharatna status to Bharat Heavy Electricals Ltd. (BHEL) and Gas Authority of India Ltd. (GAIL). One of the eligibility criteria to be given the coveted status is that the company should have an average annual turnover of over ₹ 25,000 crores during the last three years.

45. (4) Project Tiger was first initiated on 1 April, 1973 by GOI and is still going on. During the tiger census of 2006, a new methodology was used extrapolating site-specific densities of tigers, their co-predators and prey derived from camera trap and sign surveys using GIS.

46. (3) Chu-Faat is a community dance performed in Sikkim. The dance is performed in honour of Mt. Kanchenjunga, the guardian deity of Sikkim people. The dancers carrying butter lamps and bamboo leaves perform ritualistic dance in community.

47. (2) Ethyl acetate is the organic compound with the formula CH_3—COO—CH_2—CH_3, simplified to $C_4H_8O_2$.

This colourless liquid has a characteristic sweet smell and is used in glues, nail polish removers, decaffeinating tea and coffee.

48. (2) Spicejet has joined global airlines' grouping IATA as a member, becoming the first Indian low-cost carrier to get the membership.

49. (3) The Indian Constitution had taken the following from Canada:

1. Federation with a strong Centre.
2. Vesting of residuary powers in the Centre.
3. Appointment of state governors by the Centre.
4. Advisory jurisdiction of the Supreme Court.

50. (3) Mizoram assembly unanimously passed Mizoram Maintenance of Household Register Bill, 2019. It aims to create registers containing the names, details and photographs of every resident of the state, on a household basis, in an effort to detect illegal foreigners staying and 'eating away' benefits of development schemes.

PART-III (QUANTITATIVE APTITUDE)

51. (1) $\left(\frac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta}\right)^2 + 1$

$= \frac{\sin^2\theta(1 - 2\sin^2\theta)^2}{\cos^2\theta(2\cos^2\theta - 1)^2} + 1$

$= \frac{\tan^2\theta(\cos 2\theta)^2}{(\cos 2\theta)^2} + 1$

$= \tan^2\theta + 1$

$= \sec^2\theta$

52. (3) Raju's expenditure = ₹ 100

Then, his income = ₹ 120

Saving = ₹ 20

New income = ₹ $120 \times \frac{160}{100}$

= ₹ 192

New expenditure = ₹ 170

New saving = 192 – 170

= ₹ 22

% increase in saving

$= \frac{22 - 20}{20} \times 100 = 10\%$

53. (2) Ratio of efficiencies,

A : B : C = 4 : 5 : 3

(A + B + C) : (A + C) = 12 : 7

$\frac{M_1 \times D_1}{W_1} = \frac{M_2 \times D_2}{W^2}$

$\frac{12 \times 25}{1} = \frac{7 \times D_2}{\frac{35}{100}}$

$D_2 = \frac{12 \times 25 \times \frac{35}{100}}{7} = 15$

54. (2) CP of another item

$= 1240 \times \frac{75}{100} = ₹\ 930$

New selling price

$= 930 \times \frac{140}{100} = ₹\ 1302$

Profit % $= \frac{1302 - 1240}{1240} \times 100$

$= \frac{620}{124} = 5$

55. (3) Total production of A type cars in year 2015 and C type cars in 2013 = 48 + 52 = 100

Total production of D type cars in five years = 50 + 42 + 45 + 46 + 47 = 230

Required percent

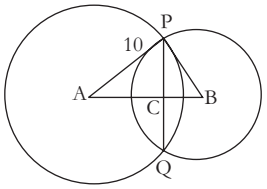
$= \frac{100}{230} \times 100 = \frac{1000}{23} \approx 43.5\%$

56. (1) Total production of C and E type cars in the year 2013 = 52 + 36 = 88

Total production of D in 2014 and 2016 and E in 2017 = 42 + 46 + 55 = 143

∴ Required ratio = 88 : 143 = 8 : 13

57. (4)



AB = x cm and PQ = 12 cm. AB always bisects PQ.

∴ PC = CQ = 6

AC = $\sqrt{10^2 - 6^2} = \sqrt{100 - 36} = 8$

BC = $\sqrt{8^2 - 6^2} = \sqrt{64 - 36}$

$= \sqrt{28} = 5.29$

x = AB = AC + BC = 8 + 5.29

= 13.29 ≈ 13.3 cm

58. (2) Cost price of item

$= 288 \times \frac{100}{96} = 300$

Marked price = 315

Required percent

$= \frac{315 - 300}{300} \times 100$

= 5%

59. (2) A's speed = a km/h,

B's speed = b km/h, then

$15\left(\frac{1}{a} - \frac{1}{b}\right) = \frac{30}{60}$

$\frac{1}{a} - \frac{1}{b} = \frac{1}{30}$ ... (i)

$15\left(\frac{1}{b} - \frac{1}{2a}\right) = 1$

$-\frac{1}{2a} + \frac{1}{b} = \frac{1}{15}$ ... (ii)

Adding (i) and (ii), we get

$\frac{1}{2a} = \frac{3}{30} = \frac{1}{10}$

$a = 5$

$$\frac{1}{b} = \frac{1}{a} - \frac{1}{30} = \frac{1}{5} - \frac{1}{30} = \frac{1}{6}$$

$$b = 6$$

60. (4) Student were there in the class initially = x. Then sum of the weights of x students in class = $68.5x$

According to question,

$$68.5x + 72.2 + 70.8 + 70.3 + 66.7 = (x + 4)\left(68.5 + \frac{300}{1000}\right)$$

$$68.5x + 280 = (x + 4) \times 68.8$$

$$68.5x + 280 = 68.8x + 275.2$$

$$0.3x = 4.8$$

$$x = 16$$

61. (3) $16x^2 + 9y^2 + 4z^2 = 24(x - y + z) - 61$

$16x^2 - 24x + 9 + 9y^2 + 24y + 16 + 4z^2 - 24z + 36 = 9 + 16 + 36 - 61$

$(4x - 3)^2 + (3y + 4)^2 + (2z - 6)^2 = 0$

If, $4x - 3 = 0 \Rightarrow x = \frac{3}{4}$

$$3y + 4 = 0 \Rightarrow y = -\frac{4}{3}$$

$$2z - 6 = 0 = z = 3$$

$$xy + 2z = \frac{3}{4} \times -\frac{4}{3} + 2 \times 3$$

$$= -1 + 6 = 5$$

62. (4) $\frac{23 - x}{39 - x} = \frac{32 - x}{56 - x}$

$$23 \times 56 - 79x + x^2 = 39 \times 32 - 71x + x^2$$

$$8x = 23 \times 56 - 39 \times 32$$

$$x = 23 \times 7 - 39 \times 4$$

$$x = 161 - 156 = 5$$

Mean proportion

$$= \sqrt{(x + 4)(3x + 1)}$$

$$= \sqrt{9 \times 16} = 12$$

63. (4) $[8(x + y)^3 - 27(x - y)^3] \div (5y - x)$

$= Ax^2 + Bxy + Cy^2$

$$\frac{[2(x+y) - 3(x-y)][4(x+y)^2 + 6(x+y)(x-y) + 9(x-y)^2]}{5y - x}$$

$= Ax^2 + Bxy + Cy^2$

$$\frac{(5y - x)[4x^2 + 8xy + 4y^2 + 6x^2 - 6y^2 + 9x^2 - 18xy + 9y^2]}{5y - x}$$

$= Ax^2 + Bxy + Cy^2$

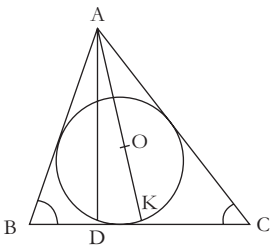
$19x^2 - 10xy + 7y^2$

$= Ax^2 + Bxy + Cy^2$

A = 19, B = – 10, C = 7

A + B + C = 19 – 10 + 7 = 16

64. (2)



$$\angle BAC = 180° - (80° + 64°)$$

$$= 180° - 144° = 36°$$

Since, circle is inscribed within a triangle, AK passing through the center must be angle bisector of ∠A. Therefore,

$$\angle BAK = \angle CAK = \frac{1}{2} \times 36°$$

$$= 18°$$

Now,

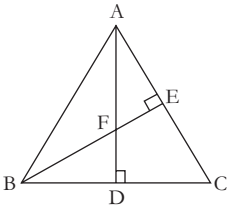
$$\angle BAD = \angle ADC - \angle ABD$$

$$= 90° - 80° = 10°$$

$$\therefore \quad \angle DAK = \angle BAK - \angle BAD$$

$$= 18° - 10° = 8°$$

65. (2)



$\Delta AEF \sim \Delta BDF$ [By AA]

$\Rightarrow$ DBF = ∠EAF

Again,

∠DBF = ∠EAF

∠BDF = ∠ADC

$\Delta BDF \sim \Delta ADC$ [by AA]

$$\frac{BD}{AD} = \frac{DF}{DC} = \frac{BF}{AC}$$

$\because$ BF = AC

or, BD = AD, DF = DC

$\therefore$ ∠ABD = ∠BAD = 45°

66. (4) Corresponding altitutude of ΔDEF

$$\frac{100}{49} = \frac{5^2}{x^2}$$

$$x = 5 \times \frac{7}{10} = 3.5$$

67. (2) Total production of B type of cars in 2013, 2014, 2015 and 2017

= 39 + 45 + 54 + 72 = 210

Production of all types of cars in 2017

= 36 + 72 + 45 + 47 + 55 = 255

Required percent

$$= \frac{255 - 210}{255} \times 100 = 17.64$$

68. (4) Required angle

$$= \frac{60}{39 + 45 + 54 + 60 + 72} \times 360°$$

$$= 80°$$

69. (4) $\cos^2\theta = 3(\cot^2\theta - \cos^2\theta)$

$$4\cos^2\theta = \frac{3\cos^2\theta}{\sin^2\theta}$$

$\cos^2\theta(4\sin^2\theta - 3) = 0$

$$\sin\theta = \frac{\sqrt{3}}{2} \Rightarrow \theta = 60°$$

$$\left(\frac{1}{2}\sec\theta + \sin\theta\right)^{-1}$$

$$= \left(\frac{1}{2}\sec 60° + \sin 60°\right)^{-1}$$

$$= \left(\frac{1}{2} \times 2 + \frac{\sqrt{3}}{2}\right)^{-1} = \left(\frac{2 + \sqrt{3}}{2}\right)^{-1}$$

$$= \frac{2}{2 + \sqrt{3}} = 2(2 - \sqrt{3})$$

70. (4) $\cos\theta = \frac{2p}{(1 + p^2)}$

$$\sin^2\theta = 1 - \frac{4p^2}{1 + p^4 + 2p^2}$$

$$\sin^2\theta = \frac{1 + p^4 + 2p^2 - 4p^2}{1 + p^4 + 2p^2}$$

$$\sin\theta = \sqrt{\frac{(1 - p^2)^2}{(1 + p^2)^2}}$$

$$= \frac{1 - p^2}{1 + p^2}$$

$$\tan\theta = \frac{\sin\theta}{\cos\theta}$$

$$= \frac{1 - p^2}{1 + p^2} \times \frac{1 + p^2}{2p} = \frac{1 - p^2}{2p}$$

71. (4) 5 ÷ 5 of 5 × 2 + 2 ÷ 2 of 2 × 5 – (5 – 2) ÷ 6 × 2

$= 5 \div (5 \times 5) \times 2 + 2 \div (2 \times 2) \times 5 - (5 - 2) \div 6 \times 2$

$$= \frac{5}{25} \times 2 + \frac{2}{4} \times 5 - \frac{3}{6} \times 2$$

$$= \frac{2}{5} + \frac{5}{2} - 1$$

$$= \frac{4 + 25 - 10}{10} = \frac{19}{10}$$

72. (2) Since the given number is divisible by 72, it must be divisible by 4, 8 and 9. Since, it is divisible by 4, last two digit must be divisible by 4. So, possible values of y are 2, 6. Since the number is divisible by 8 also, last three digits must be divisible by 8. Since, 312 is divisible by 8, only possible value of y is 2. Now, the number is divisible by 9, therefore sum of the digit must be divisible by 9.

$$7 + 8 + 9 + x + 5 + 3 + 1 + y$$
$$= 33 + x + 2$$
$$= 35 + x$$

for $x = 1$, this sum is divisible by 9.

$$5x - 3y = 5 \times 1 - 3 \times 2$$
$$= 5 - 6 = -1$$

73. (2) Amount in two years for the sum P

$$A = P\left(1 + \frac{10}{100}\right)^2$$

$$A = P \times \frac{121}{100}$$

CI in two years

$$= A - P = \frac{121}{100} P - P$$

$$= \frac{21}{100} P$$

Now, simple interest for $\frac{1}{2}$ year at 10% $= \frac{P \times \frac{121}{100} \times 10 \times \frac{1}{2}}{100}$

$$= \frac{121}{2000} P$$

According to question,

$$\frac{21}{100} P + \frac{121}{2000} P = 1623 \frac{P(420 + 121)}{2000}$$
$$= 1623$$
$$P = \frac{1623}{541} \times 2000$$
$$P = 3 \times 2000$$
$$P = 6000$$

74. (3) $x^3 + y^3 + z^3 - 3xyz$

$= (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$

$= 19[(x + y + z)^2 - 2(xy + yz + zx) - (xy + yz + zx)]$

$= 19[19^2 - 3 \times 114]$

$= 19[361 - 342]$

$= 19 \times 19 = 361$

$\sqrt{x^3 + y^3 + z^3 - 3xyz}$

$= \sqrt{361} = 19$

75. (3) Required area of sheets

= Total surface area of the tank – area of the hole

$= 2(10 \times 8 + 8 \times 6 + 10 \times 6) - \pi\left(\frac{1}{2}\right)^2$

$= 2(80 + 48 + 60) - 3.14 \times \frac{1}{4}$

$= 2 \times 188 - 0.785$

$= 376 - 0.785$

$= 375.215$

PART-IV (ENGLISH LANGUAGE)

76. (4) Rules for changing active form to passive voice:

• Places of subject and object will be interchanged in the sentence.

• Only 3rd form of the verb or past participle will be used as a main verb in the passive voice.

77. (3) **Native:** a person born in a specified place or associated with a place by birth, whether subsequently resident there or not.

78. (3) Opposite of Escalate is:

Reduce: make smaller or less in amount, degree or size.

79. (1) Opposite of tender is:

Rough: having an uneven or irregular surface; not smooth or level.

80. (4) 'Afford' meaning 'have enough money to pay for' is the perfectly fit word to fill the blank.

81. (2) Logical order of the four jumbled sentences is → BADC

82. (2) 'Investigating' meaning 'carrying out research or study into a scientific or academic field' is the perfectly fit word to fill the blank.

83. (3) Correct spelling → Competition.

84. (3) For the improvement of the sentence, use 'I have been looking for a better job' in place of 'I look for a better job'.

85. (2) Rules for changing passive form to active voice:

• Identify the subject of the sentence–who is doing an action?

• Rewrite the sentence so the subject is performing the action.

86. (4) 'Communications disrupting' must be replaced with 'Communications disrupted' form a grammatically correct sentence.

87. (4) The idiom 'Costs an arm and a leg' means 'is extremely expensive'.

88. (2) Best option for blank → was left.

89. (4) Best option for blank → he

90. (4) Best option for blank → local

91. (2) Best option for blank → alongside.

92. (3) Best option for blank → worker.

93. (1) Logical order of the four jumbled sentences is → CBAD.

94. (1) Correct spelling is → 'exemplify' meaning 'be a typical example of'.

95. (1) **Garrulous/Talkative:** excessively talkative, especially on trivial matters; fond of or given to talking.

96. (4) For the improvement of the sentence, use 'it will prove to be good' in place of 'it proves to be good'.

97. (2) 'In order' means 'according to a particular sequence'. The sentence requires a conjunction which means 'for the reason that; since'. 'Because' is the perfect replacement of 'in order that' to make the sentence grammatically and contextually correct.

98. (3) If a situation gets out of hand, it cannot be controlled any longer.

Sentence → Two men in the club had an argument that 'got out of hand' and the security guards were called.

99. (4) **Tilt/Slant:** move or cause to move into a sloping position; slope or lean in a particular direction.

100. (1) **Vagrant:** a person without a settled home or regular work who wanders from place to place and lives by begging.

❑❑❑

4 SSC – CGL

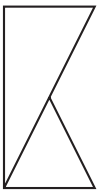
Combined Graduate Level (Tier-I) Examination
Solved Paper – 04 June, 2019 (III)

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. Three of the following four words are alike in a certain way and one is different. Pick the odd word out.
(1) Courtesy (2) Hindrance
(3) Indulgence (4) Benevolence

2. If FLOWER is coded as 14 and DISTASTE is coded as 18, then how will BUREAUCRAT be coded as?
(1) 20 (2) 22
(3) 28 (4) 18

3. Select the option in which the given figure is embedded.



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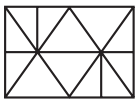
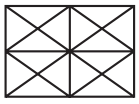
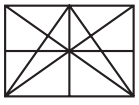
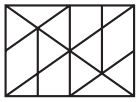
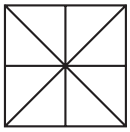
(1)  (2) 

(3)  (4) 

4. How many triangles are there in the following figure?

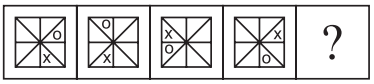


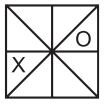
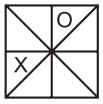
(1) 18 (2) 14
(3) 12 (4) 16

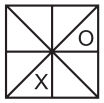
5. Select the word-pair in which the two words are related in the same way as are the two words in the following word-pair.
Frown: Displeasure
(1) Smile : Ecstasy
(2) Grief : Sorrow
(3) Madness : Illness
(4) Laugh : Comedy

6. Three of the following four word pairs are alike in a certain way and one is different. Pick the odd word out.
(1) Bangladesh : Taka
(2) Malaysia : Ringgit
(3) South Korean : Rupiya
(4) Russia : Ruble

7. Select the figure that will come next in the following figure series.



(1)  (2) 

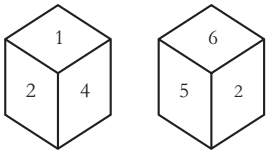
(3)  (4) 

8. Three of the following four numbers are alike in a certain way and one is different. Pick the number that is different from the rest.
(1) 789 (2) 123
(3) 567 (4) 457

9. Select the option that is related to the third term in the same way as the second term is related to the first term.
29 : 13 : : 37 : ?
(1) 17 (2) 14
(3) 15 (4) 21

10. What will be the value of the following equation if '÷' means 'addition', '+' means 'subtraction', '–' means 'multiplication' and '×' means 'division'?
$54 \times 6 - 7 \div 8 + 2 = ?$
(1) 57 (2) 69
(3) 63 (4) 61

11. Two rotated positions of a dice are given below. Which number will be at the top if '3' is at the bottom?

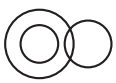
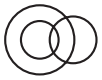


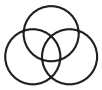
(1) 4 (2) 6
(3) 2 (4) 1

12. Arrange the following words in a logical and meaningful order.
1. Salary
2. Recruitment
3. Education
4. Promotion
5. School
6. Employment
(1) 5, 3, 2, 6, 4, 1
(2) 3, 5, 4, 2, 6, 1
(3) 5, 3, 2, 6, 1, 4
(4) 5, 3, 4, 1, 2, 6

13. Three of the following four letter-clusters are alike in a certain way and one is different. Pick the odd one out.
(1) MNPS (2) DEGJ
(3) PQTX (4) TUWZ

14. Select the Venn diagram that best illustrates the relationship between the following classes.
Graduates, Literates, Hardworking

(1)  (2) 

(3)  (4) 

15. Select the set in which the numbers are related in the same way as are the numbers of the following set.
(9, 15, 27)
(1) (6, 9, 18) (2) (15, 25, 35)
(3) (21, 35, 56) (4) (12, 20, 36)

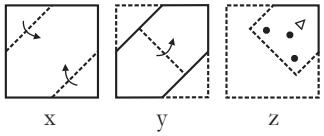
16. Two statements are given followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

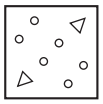
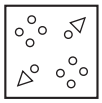
Statements:
Some mobiles are instruments.
All instruments are heavy items.

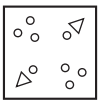
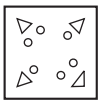
Conclusions:
I. Some mobiles are heavy items.
II. No mobile is a heavy item.
III. Some heavy items are instruments.
(1) All conclusions follow
(2) Only conclusion I follows
(3) Only conclusions I and III follow
(4) Only conclusion III and either conclusion I or II follow

17. Three of the following four letter-clusters are alike in a certain way and one is different. Pick the odd one out.
(1) IVHU (2) KXJW
(3) MZLY (4) GESO

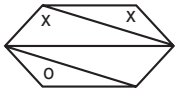
18. The sequence of folding a piece of square paper (figures X and Y) and the manner in which the folded paper has been cut (figure Z) are shown). How will the paper appear when unfolded?

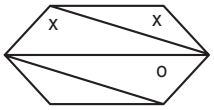


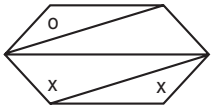
(1)  (2) 

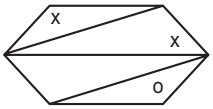
(3)  (4) 

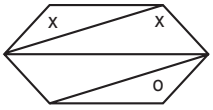
19. Select the correct mirror image of the given figure when the mirror is placed to the right of the figure.



(1) 

(2) 

(3) 

(4) 

20. In a code language if FRIDGE is written as GTLHLK, then in the same language how will you write the word KETTLE?
(1) GLXWQK
(2) LGWXQK
(3) WQLGXK
(4) XKWQLG

21. In a code language. SUNDAY is written as DNUAYS. How will MOTHER be written as in that language?
(1) HOTERM
(2) THEORM
(3) HTOERM
(4) HTEOMR

22. P is the father of Q and R is the son of S. T is the brother of P. Q is the sister of R. How is S related to T?
(1) Brother (2) Daughter
(3) Sister-in-law (4) Brother-in-law

23. Select the combination of letters that when sequentially placed in the gaps of the given letter series will complete the series.
cb_db_cba_bc_bad_c
(1) cabdc (2) acdcb
(3) acbcd (4) dcbcb

24. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.
DKFM : FIHK : : BLOP : ?
(1) DNER (2) DJIN
(3) CKHO (4) ZNEN

25. Which two signs should be interchanged in the following equation to make it correct?
$15 - 9 \div 6 \times 10 + 5 = 25$
(1) + and ÷ (2) × and –
(3) + and – (4) × and ÷

PART-II
(GENERAL AWARENESS)

26. Which of the following is a communicable disease?
(1) Diabetes (2) Asthma
(3) Measles (4) Scurvy

27. Who was the first female chief justice of a state high court in India?
(1) Leila Seth (2) Ruma Pal
(3) Syeda Tahira (4) Fatima Bibi

28. Baglihar Dam is constructed on which river?
(1) Indus (2) Chenab
(3) Sutlej (4) Ravi

29. As of May 2019, which political party does actor Raj Babbar belong to?
(1) Bahujan Samaj Party
(2) Indian National Congress
(3) Bharatiya Janata Party
(4) Samajwadi Party

30. In 2019, Kazakhstan renamed its capital Astana to ..... .
(1) Nur-Sultan (2) Nur-Nazar
(3) Nazarbayev (4) Nurbayev

31. Who bagged the 4th Carnot Prize, 2018 for his contribution towards sustainable energy solutions?
(1) Hardeep Puri
(2) Arun Jaitley
(3) Harsh Vardhan
(4) Piyush Goyal

32. The defending champions ..... won the 85th Ranji Trophy title in 2019.
(1) Mumbai (2) Karnataka
(3) Saurashtra (4) Vidarbha

33. 'Mithun', a cattle breed, is found in ..... .
(1) Arunachal Pradesh
(2) Maharashtra
(3) Kerala
(4) Tamil Nadu

34. The amount of light entering into eye can be controlled and regulated by ..... .
(1) Pupil (2) Iris
(3) Cornea (4) Retina

35. In which part of the Indian Constitution are the centre-state relations mentioned?
(1) Part XI (Articles 245 to 255)
(2) Part IV (Articles 227 to 234)
(3) Part X (Articles 234 to 240)
(4) Part XII (Articles 265 to 277)

36. Which hormone leads to the expulsion of milk from the breast when baby sucks it?
(1) Progesterone (2) Prolactin
(3) Estrogen (4) Oxytocin

37. The festival of Marabats and Badgyas celebrated in ..... directly confronts social evils and criticises their perpetrators through a procession with effigies.
(1) Hyderabad (2) Jabalpur
(3) Nagpur (4) Panaji

38. Which of the following economic activities employs the maximum number of people in India?
(1) Tourism
(2) Agriculture
(3) Mining
(4) Manufacturing

39. Who is the author of the book 'Rajatarangini'?
(1) Somadeva (2) Kalidasa
(3) Banabhatta (4) Kalhana

40. 21st March, 2019 was celebrated by the UN as World Down's Syndrome Day and the theme was ..... .
(1) "Live and let live"
(2) "Leave no one behind"
(3) "All is well"
(4) "Together we grow"

41. The period between ..... in India's history is known as the Delhi Sultanate period.
(1) 1206 AD and 1526 AD
(2) 745 AD and 1245 AD
(3) 1105 AD and 1445 AD
(4) 1456 AD and 1675 AD

42. The Nanda Devi Peak is located in ..... .
(1) Sikkim
(2) Uttarakhand
(3) Jammu and Kashmir
(4) Assam

43. In the year 1978, the ..... amendment eliminated the right to acquire, hold and dispose of property as a fundamental right.
(1) 41st (2) 42nd
(3) 43rd (4) 44th

44. Which of the following has the highest protein content per gram?
(1) Apple (2) Groundnut
(3) Soyabean (4) Wheat

45. Mihira Bhoja was the ruler of ..... .
(1) Chola (2) Rashtrakuta
(3) Chalukya (4) Pratihara

46. Which cells in our body are popularly called 'soldiers of the human body'?
(1) Red blood cells
(2) Eosinophils
(3) Basophils
(4) White blood cells

47. Vikramashila University was founded by ....., a Pala king.
(1) Dharmapala
(2) Mihira Bhoja
(3) Rajendra Chola
(4) Pulakeshin I

48. If there is a lack of money supply in comparison to the supply of goods and services, then the possible consequence would be ..... .
(1) Hyperinflation
(2) Inflation
(3) Deflation
(4) Devaluation

49. ..... won the inaugural Pro Volleyball League (PVL) title in 2019.
(1) Calicut Heroes
(2) Ahmedabad Defenders
(3) Chennai Spartans
(4) Kochi Blue Spikers

50. Veer Kunwar Singh Jayanti is celebrated in ..... in order to recognise the achievements of Kunwar Singh during the Indian rebellion of 1857.
(1) Uttarakhand
(2) Bihar
(3) Uttar Pradesh
(4) Himachal Pradesh

PART-III
(QUANTITATIVE APTITUDE)

51. A man purchases 100 copies of a book from the publisher and gets a discount of 25%. He buys 50 copies from a retailer at a discount of 10%. He got an overall discount of:
(1) 20% (2) 35%
(3) 17.5% (4) 16.5%

52. If x is added to each of 12, 28, 21 and 45, the numbers so obtained, in this order, are in proportion. What is the mean proportional between $(x + 3)$ and $(4x + 1)$?
(1) 15 (2) 18
(3) 10 (4) 12

53. Three numbers are such that if the average of any two of them is added to the third number, the sums obtained are 168, 174 and 180 respectively. What is the average of the original three numbers?
(1) 84 (2) 87
(3) 89 (4) 86

54. If $(27x^3 - 343y^3) \div (3x - 7y) = Ax^2 + By^2 + 7Cyx$, then the value of $(4A - B + 5C)$ is:

(1) 2 (2) 3
(3) 1 (4) 0

55. What will be the compound interest (nearest of ₹ 1) on a sum of ₹ 25,000 for 2 years at 12% p.a., if the interest is compounded 8-monthly?
(1) ₹ 6,349 (2) ₹ 6,439
(3) ₹ 6,394 (4) ₹ 6,493

56. The areas of the three adjacent faces of a cuboid are 32 cm^2, 24 cm^2 and 48 cm^2. What is the volume of the cuboid?
(1) 288 cm^3 (2) 256 cm^3
(3) 192 cm^3 (4) 128 cm^3

57. The value of θ, when $\sqrt{3}\cos\theta + \sin\theta = 1$ $(0° \le \theta \le 90°)$, is:
(1) 90° (2) 30°
(3) 60° (4) 0°

58. If a ΔABC, the sides AB and AC are extended to P and Q, respectively. The bisectors of $\angle PBC$ and $\angle QCB$ intersect at a point R. If $\angle R = 66°$, then the measure of $\angle A$ is:
(1) 24° (2) 48°
(3) 72° (4) 36°

59. If $x + y = 1$ and $xy(xy - 2) = 12$, then the value of $x^4 + y^4$ is:
(1) 23 (2) 25
(3) 19 (4) 20

60. If $a^2 + b^2 + 64c^2 + 16c + 3 = 2(a + b)$, then the value of $4a^7 + b^7 + 8c^2$ is:
(1) $3\frac{7}{8}$ (2) $4\frac{1}{8}$
(3) $5\frac{1}{8}$ (4) $4\frac{7}{8}$

61. On selling an article for ₹ 800, a person loses 20% of its selling price. At what price should he sell it to gain 25% on its cost price?
(1) ₹ 1,152 (2) ₹ 1,280
(3) ₹ 1,250 (4) ₹ 1,200

62. The income of A is 25% more than that of B and the income of C is 65% less than the sum of the incomes of A and B. Income of C is what percent less than the income of A?
(1) 32 (2) 28
(3) 35 (4) 37

63. The table shows the production of different types of cars (in thousands).

Years/ Cars	2014	2015	2016	2017	2018
A	64	56	57	63	70
B	48	54	63	64	72
C	33	42	48	57	64
D	25	45	40	55	35
E	40	48	52	61	60

The total production of type C cars in 2015 and type E cars in 2018 taken together is what percent of the total production of cars in 2014 and 2017 taken together?
(1) 20 (2) 22
(3) 27 (4) 25

64. If $a^2 + b^2 + c^2 = 21$, and $a + b + c = 7$, then $(ab + bc + ca)$ is equal to:
(1) 14 (2) 8
(3) 28 (4) 12

65. If $\sec\theta - \tan\theta = P$, then $\operatorname{cosec}\theta = ?$
(1) $\frac{2p}{1+p^2}$ (2) $\frac{1-p^2}{1+p^2}$
(3) $\frac{p^2+1}{1-p^2}$ (4) $\frac{2p}{1-p^2}$

66. The table shows the production of different types of cars (in thousands).

Years/ Cars	2014	2015	2016	2017	2018
A	64	56	57	63	70
B	48	54	63	64	72
C	33	42	48	57	64
D	25	45	40	55	35
E	40	48	52	61	60

The total production of type D cars during 2015 to 2017 is what percent less than the total production of type E cars during 2014, 2015, 2016 and 2018 taken together?
(1) 35 (2) 28
(3) 32 (4) 30

67. If the 8-digit number $179x\,091y$ is divisible by 88, the value of $(5x - 8y)$ is:
(1) 4 (2) 7
(3) 9 (4) 5

68. The ratio of the efficiencies of A, B and C is 7 : 5 : 4. Working together, they can finish a work in 35 days. A and B work together for 28 days. The remaining work will be completed (in days) by C alone:
(1) 60 (2) 63
(3) 56 (4) 49

69. The value of $2\frac{7}{8} \div \left(3\frac{5}{6} \div \frac{2}{7} \text{ of } 2\frac{1}{3}\right) \times \left[\left(2\frac{6}{7} \text{ of } 4\frac{1}{5} \div \frac{2}{3}\right) \times \frac{5}{9}\right]$ is:
(1) 5 (2) $\frac{1}{4}$
(3) 4 (4) $\frac{1}{23}$

70. AB and CD are two parallel chords of a circle such that AB = 6 cm and CD = 2 AB. Both chords are on the same side of the center of the circle. If the distance between them is equal to one-fourth of the length of CD, then the radius of the circle is:
(1) $4\sqrt{5}$ cm (2) $3\sqrt{5}$ cm
(3) $5\sqrt{3}$ cm (4) $4\sqrt{3}$ cm

71. The table shows the production of different types of cars (in thousands).

Years/ Cars	2014	2015	2016	2017	2018
A	64	56	57	63	70
B	48	54	63	64	72
C	33	42	48	57	64
D	25	45	40	55	35
E	40	48	52	61	60

The ratio of the total production of type A cars in 2015 and type B cars in 2014 taken together to the total production of type C cars in 2017 and type E cars in 2018 taken together is:
(1) 4 : 5 (2) 8 : 9
(3) 34 : 39 (4) 16 : 19

72. Anu allows a 20% discount on the marked price of an article and still makes a profit of 25%. If she gains

₹ 44.80 on the sale of the article, then the cost price of the article is:

(1) ₹ 179.20 (2) ₹ 188.80
(3) ₹ 184.20 (4) ₹ 192.80

73. The table shows the production of different types of cars (in thousands).

Years/ Cars	2014	2015	2016	2017	2018
A	64	56	57	63	70
B	48	54	63	64	72
C	33	42	48	57	64
D	25	45	40	55	35
E	40	48	52	61	60

In the data related to the production of type D cars is represented by a pie chart, then the central angle of the sector representing production of cars in 2015 will be:

(1) 63° (2) 99°
(3) 72° (4) 81°

74. ABCD is a cyclic quadrilateral in which $\angle A = 67°$ and $\angle B = 92°$. What is the difference the measures of $\angle C$ and $\angle D$?

(1) 19° (2) 27°
(3) 29° (4) 25°

75. The area of a triangle is 15 sq. cm and the radius of its in circle is 3 cm. Its perimeter is equal to:

(1) 12 cm (2) 5 cm
(3) 10 cm (4) 20 cm

PART-IV (ENGLISH LANGUAGE)

76. Select the synonym of the given word.

Inept

(1) Clumsy (2) Fit
(3) Strong (4) Capable

77. Select the wrongly spelt word.

(1) Comparable (2) Committee
(3) Conscience (4) Commission

78. Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution in required, select 'No improvement'.

She <u>read that novel</u> since she got up in the morning.

(1) No improvement
(2) has been reading that novel
(3) has read that novel
(4) reads that novel

79. Select the antonym of the given word.

Exceptional

(1) Uncommon (2) Unimaginable
(3) Unthinkable (4) Unremarkable

80. In the sentence, identify the segment which contains the grammatical error.

Torrential rains and winds of up to 170 km per hour swept away roads, homes and bridges and knocking down power and communication lines.

(1) Homes and bridges
(2) Knocking down
(3) Winds of up to
(4) Swept away road

81. Select the antonym of the given word.

Pardon

(1) Mercy (2) Punish
(3) Grace (4) Kindness

82. Select the synonym of the given word.

Inarticulate

(1) Eloquent (2) Incoherent
(3) Inevitable (4) Fluent

83. Select the word which means the same as the group of words given.

A cylindrical container bulging out in the middle, traditionally made of wooden staves for keeping oil, beer, etc.

(1) Bushel (2) Bale
(3) Barrel (4) Bin

Directions (84–88): In the following passage, some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.

PASSAGE

Eager to control the South Atlantic, the British Navy had tasked Admiral Byron ...**(84)**... settling an island off the South American coast ...**(85)**... ships could resupply, and then finding an alternative ...**(86)**... to the East Indies. After rounding the tip of South America, Admiral Byron confronted the world's ...**(87)**... body of water; the endless Pacific Ocean. After a month of empty blue horizon, a tiny island ...**(88)**... Byron joyously described the island's 'beautiful appearance-surrounded by a beach of the finest white sand and covered with tall trees'.

84. (1) of (2) with
(3) for (4) from

85. (1) there (2) where
(3) when (4) wherever

86. (1) means (2) road
(3) route (4) path

87. (1) more larger (2) large
(3) larger (4) largest

88. (1) appeared (2) came out
(3) showed (4) stood up

89. Select the wrongly spelt word.

(1) Exchange (2) Exercise
(3) Exclaim (4) Exite

90. Select the most appropriate word to fill in the blank.

A number of Indian goods face a ..... competition from Chinese goods in terms of prices and looks.

(1) fierce (2) bold
(3) angry (4) powerful

91. Select the correct passive form of the given sentence.

Please show me my son's Mathematics notebook.

(1) I may please be shown my son's Mathematics notebook
(2) My son may please be shown the Mathematics notebook
(3) I will please be shown my son's Mathematics notebook
(4) My son's Mathematics notebook was please shown to me.

92. Select the most appropriate meaning of the given idiom.
Actions speak louder than words
(1) What you do is more important than what you say
(2) Take up a task that you cannot finish
(3) Look for solutions in the wrong place
(4) Do something without planning

93. Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution is required, select 'No improvement'.
If I have money, <u>I purchase</u> this house.
(1) I purchased
(2) I will purchase
(3) No improvement
(4) I have purchased

94. Given below are four jumbled sentences. Select the option that gives their correct order.
A. And 844 million don't have access to clean water close to home, according to the latest report by Water Aid.
B. Around 4 billion people in the world live in physically water-scarce areas.
C. It is because globally we use six times as much water today as we did 100 years ago.
D. The world's crisis is getting worse.
(1) BADC (2) BDCA
(3) CADB (4) DACB

95. Given below are four jumbled sentences. Select the option that gives their correct order.
A. An estimated 70% of this plastic which enters the sea sinks.
B. This is a problem that stretches far beyond India.
C. Eight million tonnes of plastic end up in the world's oceans every year, causing damage to the fragile ecosystem.
D. And much of it is not biodegradable.
(1) ADBC (2) CADB
(3) ABDC (4) CDBA

96. Select the most appropriate word to fill in the blank.
Many items made of ivory were ..... from a dealer in antiques by the customs authorities at the Delhi airport.
(1) annexed
(2) confiscated
(3) hijacked
(4) appropriated

97. Select the correct active voice form of the given sentence.
The crop was adversely affected by the inadequate rainfall.
(1) The inadequate rainfall adversely affected the crop.
(2) The inadequate rainfall was adversely affecting the crop.
(3) The inadequate crop adversely affected the rainfall.
(4) The adversely rainfall has affected the inadequate crop.

98. Select the most appropriate meaning of the given idiom.
Pull someone's leg
(1) Joke with someone
(2) Get upset with someone
(3) Tell someone of secret
(4) Trust someone

99. Select the word which means the same as the group of words given.
A person who draws or produces maps
(1) Calligrapher
(2) Cartographer
(3) Lexicographer
(4) Choreographer

100. In the sentence, identify the segment which contains the grammatical error.
She lost a big order from a known showroom in case of her own carelessness.
(1) She lost a big order
(2) her own carelessness
(3) from a known showroom
(4) in case of

Short Answers

1. (2)	**2.** (2)	**3.** (1)	**4.** (4)	**5.** (1)	**6.** (3)	**7.** (1)	**8.** (4)	**9.** (1)	**10.** (2)
11. (3)	**12.** (3)	**13.** (3)	**14.** (2)	**15.** (4)	**16.** (3)	**17.** (4)	**18.** (2)	**19.** (3)	**20.** (2)
21. (3)	**22.** (3)	**23.** (2)	**24.** (2)	**25.** (3)	**26.** (3)	**27.** (1)	**28.** (2)	**29.** (2)	**30.** (1)
31. (4)	**32.** (4)	**33.** (1)	**34.** (1)	**35.** (1)	**36.** (2)	**37.** (3)	**38.** (2)	**39.** (4)	**40.** (2)
41. (1)	**42.** (2)	**43.** (4)	**44.** (3)	**45.** (4)	**46.** (4)	**47.** (1)	**48.** (3)	**49.** (3)	**50.** (2)
51. (1)	**52.** (1)	**53.** (2)	**54.** (1)	**55.** (4)	**56.** (3)	**57.** (1)	**58.** (2)	**59.** (2)	**60.** (3)
61. (4)	**62.** (4)	**63.** (1)	**64.** (1)	**65.** (3)	**66.** (4)	**67.** (1)	**68.** (3)	**69.** (1)	**70.** (2)
71. (2)	**72.** (1)	**73.** (4)	**74.** (4)	**75.** (3)	**76.** (1)	**77.** (3)	**78.** (2)	**79.** (4)	**80.** (2)
81. (2)	**82.** (2)	**83.** (3)	**84.** (2)	**85.** (4)	**86.** (3)	**87.** (4)	**88.** (1)	**89.** (4)	**90.** (1)
91. (1)	**92.** (1)	**93.** (2)	**94.** (1)	**95.** (2)	**96.** (2)	**97.** (1)	**98.** (1)	**99.** (2)	**100.** (4)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (2) Courtesy, Indulgence and Benevolence have the same meaning → being kind or helpful.

Hindrance means → an obstacle.

It is different in compare to them.

2. (2) FLOWER → 6 letters

⇒ $(6 \times 2) + 2 = 14$

DISTANCE → 8 letters

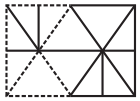
⇒ $(8 \times 2) + 2 = 18$

BUREAUCRAT → 10 letters

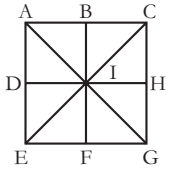
⇒ $(10 \times 2) + 2 = \boxed{22}$

3. (1)

Clearly the above figure is embedded only in option (1).



4. (4)



Triangles = ACG, CGE, GEA, EAC, ACI, CGI, GEI, AEI, ABI, BCI, CHI, GHI, GFI, EFI, DEI, ADI.

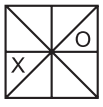
Number of trianlges = 16.

5. (1) Smile is an expression and ecstasy is a feeling.

But in other word-pair, both the words expresses feeling.

6. (3) Currency of South Korea is South Korean Won.

7. (1) The next figure that will come in the series is:



8. (4) 789, 123 and 567 → all are divisible by 3.

But, 457 is not divisible by 3.

9. (1) $\frac{(29-3)}{2} = \frac{26}{2} = 13$

$\therefore \frac{(37-3)}{2} = \frac{34}{2} = \boxed{17}$

10. (2)

Symbol	÷	+	–	×
Meaning	+	–	×	÷

$54 \times 6 - 7 \div 8 + 2 = ?$

After changing the symbols,

$54 \div 6 \times 7 + 8 - 2$

(Applying BODMAS rule)

or, $9 \times 7 + 8 - 2$

or, $63 + 8 - 2$

or, $71 - 2$

$\therefore$ 69

11. (3) Moving in the clockwise direction,

Cube 1 : 2 1 4

Cube 2 : 2 5 6

Clearly, 3 will be opposite to 2.

12. (3) Correct sequence of a life career is → School (5) → Education (3) → Recruitment (2) → Employment (6) → Salary (1) → Promotion (4).

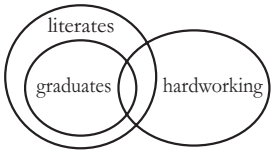
13. (3) $M \xrightarrow{+1} N \xrightarrow{+2} P \xrightarrow{+3} S$

$D \xrightarrow{+1} E \xrightarrow{+2} G \xrightarrow{+3} J$

$T \xrightarrow{+1} U \xrightarrow{+2} W \xrightarrow{+3} Z$

$\boxed{P \xrightarrow{+1} Q \xrightarrow{+3} T \xrightarrow{+4} X}$

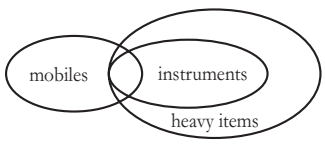
14. (2)



15. (4) $9 \xrightarrow{+6} 15 \xrightarrow{+12} 27$

$12 \xrightarrow{+8} 20 \xrightarrow{+16} 36$

16. (3)



17. (4)

$I \xrightarrow{+13} V \xrightarrow{-14} H \xrightarrow{+13} V$

$K \xrightarrow{+13} X \xrightarrow{-14} J \xrightarrow{+13} W$

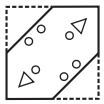
$M \xrightarrow{+13} Z \xrightarrow{-14} L \xrightarrow{+13} Y$

$\boxed{G \xrightarrow{-2} E \xrightarrow{+14} S \xrightarrow{-4} O}$

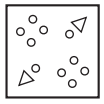
18. (2)

When the above paper (z) unfold, it appears as mentioned below :

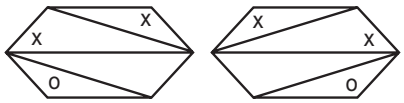
Step-1



Step-2



19. (3) In a plane mirror, a mirror image is a reflected duplication of an object that appears almost identical, but it is reversed in the direction perpendicular to the mirror surface. As an optical effect it results from reflection of substances such as a mirror or water.



20. (2) F R I D G E

+1 +2 +3 +4 +5 +6

G T L H L K

$\therefore$ K E T T L E

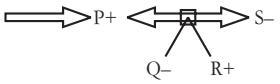
+1 +2 +3 +4 +5 +6

L G W X Q K

21. (3) SUNDAY code is DNUAYS.

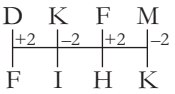
2nd, 3rd and 4th letter written in reverse order. 5th and 6th letter written as it is followed by the first letter.

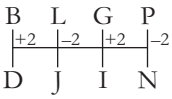
Similarly, the code for MOTHER will be HTOERM.

22. (3) 

Hence, it is clear that S is sister-in-law of T.

23. (2) cb<u>a</u>db<u>c</u> | cba<u>d</u>bc | <u>c</u>bad<u>b</u>c

24. (2) 

∴ 

25. (3) 15 – 9 ÷ 6 × 10 + 5 = 25

According to the question,

If we interchange the + and – sign the above equation become correct.

15 + 9 ÷ 6 × 10 – 5

or, 15 + 15 – 5

∴ 30 – 5 = 25

Part-II (General Awareness)

26. (3) Measles is a highly communicable disease. It is a serious childhood disease caused by a virus. It is easily spread by coughing, sneezing or even talking to an infected person. Measles begins with a fever, runny nose and cough.

27. (1) Leila Seth was the first woman judge on the Delhi High Court. She became the first woman to become Chief Justice of a state High Court on 5 August, 1991.

28. (2) Baglihar Dam is built on Chenab River in the Doda districit of Jammu & Kashmir. The hydro-power project named 'Baglihar Hydroelectric Power Project', is a run-of-the-river power project on the Chenab River. This project was conceived in 1992, approved in 1996 and construction began in 1999.

29. (2) Raj Babbar is a Hindi and Punjabi film actor and politician belonging to the Indian National Congress. He has been a three-time member of the Lok Sabha and a two-time member of the Upper House of the Indian Parliament.

30. (1) Kazakhstan was renamed its capital Astana as Nur-Sultan in honour of the country's long time president who resigned in a surprise move. The order to change the capital city's name was issued on Saturday by Kazakhstan's newly sworn-in interim President Kassym-Jomart Tokayev.

31. (4) Piyush Goyal received Carnot Prize for his contribution towards sustainable energy solutions. The Carnot Prize is the Kleinman Center's annual recognition of distinguished contributions to energy policy through scholarship or practice.

32. (4) Vidarbha were the defending champions. The 2018-19 Ranji Trophy was the 85th season of the Ranji Trophy, the premier first-class cricket tournament that took place in India between November 2018 and February 2019.

33. (1) Mithun is a cattle breed found in Arunanchal Pradesh. Mithun is also known as 'Cattle of Mountain'. It is an important bovine species of north-eastern hill region of India and also of China, Myanmar, Bhutan and Bangladesh.

34. (1) The amount of light entering into eye can be controlled and regulated by pupil. In low light conditions, the pupil dilates, so more light can reach the retina to improve night vision. In bright conditions, the pupil constricts to limit how much light enters the eye (too much light can cause glare and discomfort, and it may even damage the lens and retina).

35. (1) In Part XI (Articles 245 to 255) of the Indian Constitution are centre-state relations mentioned.

The centre-state relations are divided into three parts which are mentioned below:

(1) Legislative Relations (Articles 245–255)
(2) Administrative Relations (Articles 256–263)
(3) Financial Relations (Articles 268–293)

36. (2) Prolactin is a hormone that promotes milk production (lactation) in mammals in response to the sucking of young after birth. Production of prolactin takes place in the pituitary gland.

37. (3) On Bhadrapada Shukla Pratipada of the Indian lunar calendar, a unique festival, popularly known as Marabat, is celebrated in the eastern part of Vidarbha. In the evening, a festival of toy bulls called 'Tanha Pola' is celebrated by children. Marabat and Badgyas are female and male representations, respectively. Nagpurians have a novel way of wishing away everything that troubles society, in the form of the Marbat.

38. (2) Agriculture sector employs maximum number of people in india, whereas it has the least contribution in GDP. The opposite scenario is due to lack of technological upgradation in agriculture, disguise employment, land fragmentation and low agricultural input.'

39. (4) **Kalhana** was the son of a Kashmiri minister Carpaka. He was most probably a Brahmin who wrote the Rajatarangini. Kalhan's father, Carpaka is speculated to have served as a 'dwarpati' (commandant) with the King Harsha of the Lohara dynasty.

40. (2) World Down's Syndrome Day was celebrated on 21st March, 2019. Its theme was "Leave no one behind". It is a global event organised to advocate the rights of people or children suffering from 'Down's Syndrome' and to send a message that they too can live a happy and normal life.

41. (1) Period between 1206 AD and 1526 AD is considered as Delhi Sultanate period. The kingdoms of Delhi Sultanate period are as follows:

- Slave dynasty 1206 AD–1290 AD
- Khilji dynasty 1290 AD–1320 AD
- Tughlaq dynasty 1321 AD–1413 AD
- Sayyid dynasty 1414 AD–1450 AD
- Lodhi dynasty 1451 AD–1526 AD

42. (2) The Nanda Devi Peak is the second highest mountain in India. It is the 23rd highest peak in the world. It is part of the Garhwal Himalayas and is located in Chamoli district of Uttarakhand.

43. (4) In the year 1978, the 44th amendment eliminated the right to

acquire, hold and dispose of property as a fundamental right. It was made legal right instead of fundamental one. Article 19(1)(f), which guarantees the citizens the right to acquire, hold and dispose of property and Article 31 relating to compulsory acquisition of property have been omitted.

44. (3) Soyabean is one of the richest source of protein. The nutrition facts for 100 grams of boiled soyabeans are:

Protein: 16.6 grams; Carbs: 9.9 grams; Sugar: 3 grams; Fiber: 6 grams; Fat: 9 grams.

45. (4) Mihira Bhoja was a ruler of the Gurjara-Pratihara dynasty of India. He succeeded his father Ramabhadra. Bhoja was a devotee of Vishnu and adopted the title of 'Adivaraha' which is inscribed on some of his coins.

46. (4) WBCs are also known as Soldiers of human body. White blood cells are part of the body's immune system. They help the body fight infection and other diseases. Types of white blood cells are granulocytes (neutrophils, eosinophils, and basophils), monocytes and lymphocytes (T cells and B cells).

47. (1) Vikramashila was founded by Pala king Dharmapala in the late 8^{th} or early 9^{th} century. It is one of the top center of education not only for Indians but also for foreigners.

48. (3) Deflation: It is the decline in the prices for goods and services that occur when the rate of inflation falls below 0%.

It is normally linked with significant unemployment and low productivity levels of goods and services.

49. (3) Chennai Spartans defeated Calicut Heroes by 3-0 to win the inaugural edition of the Pro Volleyball League in the inaugural Pro Volleyball League (PVL) title in 2019.

50. (2) Kunwar Singh was a notable leader during the Indian Rebellion of 1857. He belonged to a royal house of Jagdispur, Bihar. At the age of 80, he led a select band of armed soldiers against the troops under the command of the British East India Company.

PART-III (QUANTITATIVE APTITUDE)

51. (1) Price of one copy of book is ₹ 100

Price of 100 copies from a retailer
$= 100 \times 100 = 10000$

Discounted price of 100 copies
$= 10000 \times \frac{75}{100}$
$= 7500$

Price of 50 copies
$= 50 \times 100 = 5000$

Discounted price of 50 copies
$= 5000 \times \frac{90}{100}$
$= 4500$

Total Price of 150 copies = 15000

The man paid a total of
= 7500 + 4500 = 12000

Overall discount
$= \frac{15000 - 12000}{15000} \times 100 = \frac{3000}{150}$
= 20%

52. (1) According to question,
$\frac{12 + x}{28 + x} = \frac{21 + x}{45 + x}$
$x^2 + 57x + 12 \times 45$
$= x^2 + 49x + 21 \times 28$
$8x = 21 \times 28 - 12 \times 45$
$x = 4 \times \frac{3}{8}(7 \times 7 - 3 \times 15) = \frac{3}{2} \times 4 = 6$

Mean proportion
$= \sqrt{(x + 3)(4x + 1)}$
$= \sqrt{(6 + 3)(4 \times 6 + 1)}$
$= 3 \times 5 = 15$

53. (2) Numbers = x, y and z.
$\frac{x + y}{2} + z = 168$ ... (i)
$\frac{y + z}{2} + x = 174$ ... (ii)
$\frac{x + z}{2} + y = 180$ ... (iii)

Adding (i), (ii) and (iii) we get,
$\frac{2(x + y + z)}{2} + (x + y + z) = 522$
$2(x + y + z) = 522$
$x + y + z = 261$
$\frac{x + y + z}{3} = 87$

54. (1) $\frac{27x^3 - 343y^3}{3x - 7y} = Ax^2 + By^2 + 7Cxy$

$\frac{(3x - 7y)(9x^2 + 21xy + 49y^2)}{3x - 7y}$
$= Ax^2 + By^2 + 7Cxy$
$9x^2 + 21xy + 49y^2$
$= Ax^2 + 7Cxy + By^2$
$A = 9, B + 49, 7C = 21 \Rightarrow C = 3$
$4A - B + 5C = 36 - 49 + 15 = 2$

55. (4) 2 Years = 24 months = 3 times compounded 8-monthly.

Rate of CI for 12 months = 12%

Rate of CI for 8 months
$= 12 \times \frac{8}{12} = 8\%$

$A = 25000\left(1 + \frac{8}{100}\right)^3$

$A = 25000\left(\frac{27}{25}\right)^3$

$A = 25000 \times \frac{19683}{15625}$
$= 1.6 \times 19683$
$= 31492.8$

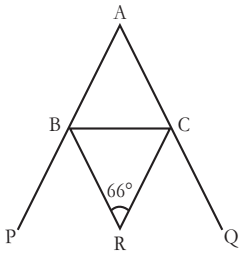
CI = A – P = 31492.8 – 25000
= 6492.8
CI ≈ ₹ 6493

56. (3) Length, breadth and height of cuboid = l, b and h. Then,
$lb = 48$ ... (i)
$bh = 24$ ... (ii)
$lh = 32$ ... (iii)
$(lb)(bh)(lh) = 48 \times 24 \times 32$
$l^2b^2h^2 = 48 \times 24 \times 32$
$lbh = \sqrt{48 \times 24 \times 32}$
$= 4\sqrt{3} \times 2\sqrt{3}\sqrt{2} \times 4\sqrt{2}$
$= 192 \text{ cm}^3$

57. (1) $\sqrt{3}\cos\theta + \sin\theta = 1$
$3\cos^2\theta = (1 - \sin\theta)^2$
$3(1 - \sin^2\theta) = (1 - 2\sin\theta + \sin^2\theta)$
$4\sin^2\theta - 2\sin\theta - 2 = 0$
$2\sin^2\theta - \sin\theta - 1 = 0$
$2\sin^2\theta - 2\sin\theta + \sin\theta - 1 = 0$
$(2\sin\theta + 1)(\sin\theta - 1) = 0$
$\sin\theta = -\frac{1}{2}$ or 1

$\theta = 240°$ or $90°$ since, $0° \le \theta \le 90°$,
$\therefore \quad \theta = 90°$

58. (2)



Using formula,

$$\angle R = 90° - \frac{1}{2}\angle A$$

$$\angle A = 180° - 2\angle R$$

$$\angle A = 180° - 2 \times 66°$$

$$\angle A = 180° - 132° = 48°$$

59. (2) $(x + y)^2 = 1$

$$2xy = -x^2 - y^2$$

now,

$$xy(xy - 2) = 12$$

$$x^2y^2 - 2xy = 12$$

$$\frac{(1 - x^2 - y^2)^2}{4} - (1 - x^2 - y^2) = 12$$

$1 + x^4 + y^4 - 2x^2 + 2x^2y^2 - 2y^2 - 4 + 4x^2 + 4y^2 = 48$

$x^4 + y^4 + 2(x^2 + y^2) + 2x^2y^2 = 51$

$x^4 + y^4 + 2[(x + y)^2 - 2xy] + 2x^2y^2 = 51$

$x^4 + y^4 + 2(1)^2 - 4xy + 2x^2y^2 = 51$

$x^4 + y^4 + 2xy(xy - 2) = 51 - 2$

$x^4 + y^4 + 2(12) = 49$

$x^4 + y^4 = 49 - 24 = 25$

60. (3) $a^2 + b^2 + 64c^2 + 16c + 3 = 2(a + b)$

$a^2 - 2a + 1 + b^2 - 2b + 1 + 64c^2 + 16c + 1 = 0$

$(a - 1)^2 + (b - 1)^2 + (8c + 1)^2 = 0$

$a = 1, b = 1, c = -\frac{1}{8}$

$4a^7 + b^7 + 8c^2 = 4(1)^7 + 1^7 + 8$

$\left(-\frac{1}{8}\right)^2 = 5\frac{1}{8}$

61. (4) CP = SP + Loss

$$= 800 \times \frac{120}{100} = 960$$

Required SP $= 960 \times \frac{125}{100} = ₹\,1200$

62. (4) Income of B = 100, then income of A = 125 and income of c

$$= (100 + 125) \times \frac{35}{100}$$

$$= 225 \times \frac{35}{100} = \frac{315}{4}$$

Required %

$$= \frac{125 - \frac{315}{4}}{125} \times 100$$

$$= \frac{500 - 315}{5 \times 4} \times 4$$

$$= 37$$

63. (1) The total production of type C cars in 2015 and type E cars in 2018

$$= 42 + 60 = 102$$

Total production of cars in 2014 and 2017 = (64 + 48 + 33 + 25 + 40) + (63 + 64 + 57 + 55 + 61)

$$= 210 + 300 = 510$$

Required percent

$$= \frac{102}{510} \times 100 = 20\%$$

64. (1) $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ac)$

$7^2 = 21 + 2(ab + bc + ac)$

$$ab + bc + ac = \frac{49 - 21}{2} = \frac{28}{2} = 14$$

65. (3) $\sec^2\theta - \tan^2\theta = 1$

$(\sec\theta - \tan\theta)(\sec\theta + \tan\theta) = 1$

$$\sec\theta + \tan\theta = \frac{1}{P}$$

$$\sec\theta = \frac{P + \frac{1}{P}}{2} = \frac{P^2 + 1}{2P}$$

$$\tan\theta = \frac{\frac{1}{P} - P}{2} = \frac{1 - P^2}{2P}$$

$$\sin\theta = \frac{1 - P^2}{2P}$$

$$\cos\theta = \frac{1 - P^2}{2P} \times \frac{2P}{1 + P^2}$$

$$= \frac{1 - P^2}{1 + P^2}$$

$$\operatorname{cosec}\theta = \frac{1 + P^2}{1 - P^2} = \frac{P^2 + 1}{1 - P^2}$$

66. (4) The total production of type D cars during 2015 to 2017

$$= 45 + 40 + 55 = 140$$

Total production of type E cars during 2014, 2015, 2016 and 2018

$$= 40 + 48 + 52 + 60$$

$$= 200$$

Required percent

$$= \frac{200 - 140}{200} \times 100$$

$$= \frac{60}{2} = 30\%$$

67. (1) Since, the number is divisible by 88, it must be divisible by 11, 8 and 4 also. So, last two digit must be divisible by 4. So, the possible values of y are 2 and 6. Now last three digit must be divisible by 8. So, only for $y = 2$, the number 912 is divisible by 8. Hence, $y = 2$. Now, the number is divisible by 11. Therefore,

$(-1 + 7 - 9 + x - 0 + 9 - 1 + y)$

$= (5 + x + y) = (5 + x + 2) = (7 + x)$

must be divisible by 11. For $x = 4$, it is divisible by 11.

$$(5x - 8y) = 20 - 16 = 4$$

68. (3) A : B: C = 7 : 5 : 4

(A + B + C): (A + B) = 16 : 12 = 4 : 3

$$\frac{M_1D_1}{W_1} = \frac{M_2D_2}{W_2}$$

$$\frac{4 \times 35}{1} = \frac{3 \times 28}{W_2}$$

$$W_2 = \frac{3}{5}$$

A and B together finish $\frac{3}{5}^{th}$ of the work in 28 days. Remaining work = $\frac{2}{5}$.

Now,

(A + B + C): C = 16 : 4 = 4 : 1

$$\frac{4 \times 35}{1} = \frac{1 \times D}{\frac{2}{5}}$$

$$D = 4 \times 35 \times \frac{2}{5} = 56$$

69. (1) $2\frac{7}{8} \div \left(3\frac{5}{6} \div \frac{2}{7} \text{ of } 2\frac{1}{3}\right) \times \left[\left(2\frac{6}{7} \text{ of } 4\frac{1}{5} \div \frac{2}{3}\right) \times \frac{5}{9}\right]$

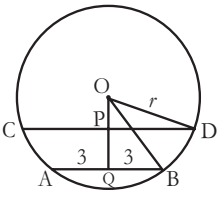
$$= \frac{23}{8} \div \left[\frac{23}{6} \div \left(\frac{2}{7} \times \frac{7}{3}\right)\right] \times \left[\left\{\left(\frac{20}{7} \times \frac{21}{5}\right) \div \frac{2}{3}\right\} \times \frac{5}{9}\right]$$

$$= \frac{23}{8} \div \left[\frac{23}{6} \times \frac{3}{2}\right] \times \left[\left\{12 \times \frac{3}{2}\right\} \times \frac{5}{9}\right]$$

$$= \frac{23}{8} \div \frac{23}{4} \times \left[18 \times \frac{5}{9}\right]$$

$$= \frac{23}{8} \times \frac{4}{23} \times 10 = 5$$

70. (2)



AB = 6, CD = 2 AB = 12, PQ = $\frac{CD}{4}$ = 3

Since, OQ ⊥ AB and OP ⊥ CD,

CP = PD = 6, AQ = QB = 3

$OD = OB = r$

$OD^2 = OB^2$

$OP^2 + PD^2 = OQ^2 + QB^2$

$OP^2 + 6^2 = (OP + 3)^2 + 3^2$

$OP^2 + 36 = OP^2 + 60P + 9 + 9$

$60P = 18$

$OP = 3$

$r = \sqrt{OP^2 + PD^2}$

$= \sqrt{9 + 36} = 3\sqrt{5}$

71. (2) Total production of A type cars in 2015 and B type cars in 2014

= 56 + 48 = 104

Total production of type C cars in 2017 and type E cars in 2018

= 57 + 60 = 117

Required ratio

= 104 : 117 = 8 : 9

72. (1) 25% of CP = ₹ 44.80

$100\%\ \text{of CP} = 44.80 \times \frac{100}{25}$

= ₹ 179.2

73. (4) Required angle

$= \frac{\text{prod. of D in 2015}}{\text{Total prod. of D}} \times 360°$

$= \frac{45}{25 + 45 + 40 + 55 + 35} \times 360°$

$= \frac{45}{200} \times 360° = 81°$

74. (4) Since, ABCD is cyclic quadrilateral,

$\angle C = 180° - \angle A$

$= 180° - 67° = 113°$

$\angle D = 180° - \angle B$

$= 180° - 92° = 88°$

$\angle C - \angle D = 113° - 88° = 25°$

75. (3) In ΔABC,

A is the area, r is the inradius and and s is the semi-perimeter.

$A = sr$

$s = \frac{A}{r} = \frac{15}{3} = 5$

$2s = 10$ cm

PART-IV (ENGLISH LANGUAGE)

76. (1) **Inept/Clumsy:** having or showing no skill; awkward in movement or in handling things.

77. (3) The correct spelling is → Conscience.

78. (2) For improvement of sentence use 'has been reading that novel' in place of 'read that novel'.

79. (4) Opposite of Exceptional is:

Unremarkable: not particularly interesting or surprising.

80. (2) Sentence is in the past tense. 'knocking' is grammatically incorrect. It should be 'knocked' to form a grammatically correct sentence.

81. (2) Opposite of Pardon is:

Punish: inflict a penalty or sanction on (someone) as retribution for an offence, especially a transgression of a legal or moral code.

82. (2) **Inarticulate/Incoherent:** unable to express one's ideas or feelings clearly or easily.

83. (3) **Barrel:** a cylindrical container bulging out in the middle, traditionally made of wooden staves with metal hoops round them.

84. (2) Use the preposition 'with' after the verb 'tasked'. Appropriate word for blank → 'with'.

85. (4) Best option for the blank → where.

86. (3) Best option for the blank → Route.

87. (4) The superlative form of the adjective 'large'.

Best option for the blank → largest.

88. (1) Best option for the blank → appeared.

89. (4) Correct spelling → 'Excite' meaning 'cause (someone) to feel very enthusiastic and eager'.

90. (1) 'Fierce' meaning 'powerful and destructive' is the appropriate word to fill the blank.

91. (1) Changing active form to passive voice:

• Places of subject and object will be interchanged in the sentence.

• Only 3rd form of the verb or past participle will be used as a main verb in the passive voice.

92. (1) The phrase 'actions speak louder than words' means that people are more likely to believe what you do rather than what you say.

Sentence → Rita always says she'll donate to the school, and she never does, so I doubt she will this year.

93. (2) For improvement of sentence use 'I will purchase' in place of 'I purchase'.

94. (1) Logical order of the four jumbled sentences is → BADC.

95. (2) Logical order of the four jumbled sentences is → CADB.

96. (2) Most appropriate word to fill in the blank → Confiscated.

• 'Confiscate' means 'take or seize (someone's property) with authority.

97. (1) Changing passive form to active voice:

• Identify the subject of the sentence – who is doing an action?

• Rewrite the sentence so the subject is performing the action.

98. (1) The phrase 'pull someone's leg' means 'to joke with someone playfully; to tease someone'.

Sentence → I love pulling my brother's leg – it's almost to easy to annoy him.

99. (2) **Cartographer:** a person who draws or produces maps.

100. (4) Replace 'because' in place of 'in case of' for the correct sentence.

❑❑❑

5 SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 20 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Spring : Spiral : : Bangle : ?
(1) Glass (2) Circle
(3) Ornament (4) Gold

2. WUV : TRS : : QOP : ?
(1) XYZ (2) CBA
(3) ABZ (4) NLM

3. 7.25 : 7.75 : : 9 : ?
(1) 9.5 (2) 7
(3) 10 (4) 8.5

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Sparrow (2) Pigeon
(3) Crow (4) Housefly

5. (1) RQS (2) XWV
(3) MLN (4) FEG

6. (1) 700 (2) 250
(3) 350 (4) 640

Directions (7–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

7. Oxygen, Toil, Arouse, Arson, Tenuous, ?
(1) Onion (2) Lustrous
(3) Lion (4) Onto

8. ZYX, VUT, QPO, MLK, HGF, ?
(1) DCB (2) CBA
(3) BCD (4) EDC

9. 400, –200, 100, ?, 25, –12.5
(1) –50 (2) 50
(3) 75 (4) –75

10. Bhavin's birthday is on Monday 29th May. On what day of the week will be Rachit's birthday in the same year if Rachit was born on 17th November?
(1) Saturday (2) Wednesday
(3) Sunday (4) Friday

11. The weights of 4 boxes are 30, 70, 60 and 90 kg. Which of the following cannot be the total weight, in kilogram, of any combination of these boxes and in a combination a box can be used only once?
(1) 250 (2) 200
(3) 190 (4) 220

12. From the given words, select the word which cannot be formed using the letters of the given word.
MYSTIQUE
(1) EMITS (2) TEAMS
(3) SUITE (4) QUIET

13. If IMPLORE is coded as GKNJMPC, then how will HUB be coded as?
(1) AWN (2) WAO
(3) FSZ (4) TEY

14. In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
72 × 9 – 14 + 2 = ?
(1) 20 (2) 86
(3) 30 (4) 36

15. If 52 % 32 = 40, 22 % 20 = 4, then what is the value of 15 % 11 = ?
(1) 39 (2) 11
(3) 33 (4) 8

16. Select the missing number from the given responses.

216	16	49
3	4	?
6	2	7

(1) 42 (2) 56
(3) 2 (4) 5

17. A woman in a shopping complex walks 250 m East, then she turns North and walks 100 m, then she turns West and walks 120 m, then she turns to her left and walks 100 m. Where is she now with reference to her starting position?
(1) 130 m East (2) 130 m West
(3) 370 m East (4) 370 m West

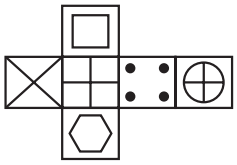
18. In the question two statements are given, followed by two conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statements?

Statements:
All drinks are food.
No eatables are drinks.

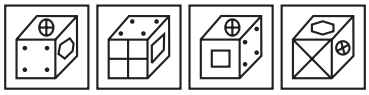
Conclusions:
I. Some food are eatables.
II. Some eatables are food.
(1) Only conclusion I follows
(2) Only conclusion II follows
(3) Both conclusions I and II follow
(4) Neither conclusion I nor II follows

19. Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?

Question Figure

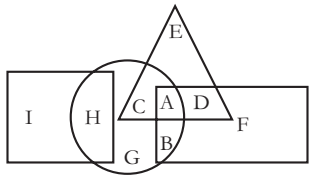


Answer Figures



(1) (2) (3) (4)

20. In the following figure, square represents Dentists, triangle represents Collectors, circle represents Indians and rectangle represents Women. Which set of letters represents Indians who are either Collectors or Women?

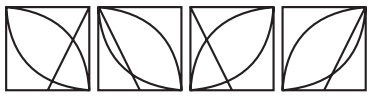


(1) A, B, C (2) D, B, E
(3) C, G, H (4) E, F, I

21. Which answer figure will complete the pattern in the question figure?

Question Figure

Answer Figures

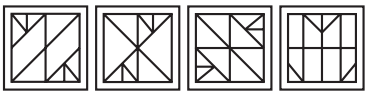


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

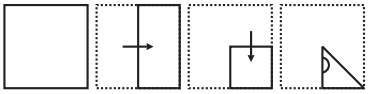
Answer Figures



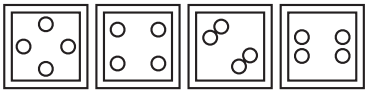
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figures



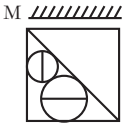
Answer Figures



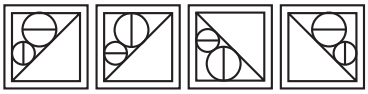
(1) (2) (3) (4)

24. If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'K' can be represented by 13, 34, etc. and 'Z' can be represented by 85, 79 etc. Similarly, you have to identify the set for the word 'PLOT'.

Matrix-I

	0	1	2	3	4
0	J	B	B	I	A
1	A	G	F	K	L
2	H	E	F	G	C
3	I	A	M	A	K
4	J	F	C	B	M

Matrix-II

	5	6	7	8	9
5	O	U	O	P	U
6	P	X	U	N	Y
7	W	W	N	R	Z
8	Z	N	T	S	Y
9	U	W	U	U	X

(1) 58, 14, 57, 87
(2) 44, 04, 76, 86
(3) 03, 23, 86, 69
(4) 23, 04, 99, 99

PART-II (GENERAL AWARENESS)

26. The demand for a normal good increases with ..... in the consumer's income.
(1) increase (2) decrease
(3) constant (4) double

27. Short run marginal cost curve cuts the average variable cost curve from ..... at the minimum point of average variable cost.
(1) top (2) below
(3) right (4) left

28. "Forests" is listed in the ..... list given in the Seventh Schedule in the Constitution of India.
(1) Union (2) State
(3) Global (4) Concurrent

29. Which Fundamental Right in the Indian Constitution states that all persons shall be equally protected by the laws of the country?
(1) Right to Equality
(2) Right to Freedom
(3) Right against Exploitation
(4) Right to Freedom of Religion

30. ..... was imprisoned for the rest of his life by Aurangzeb.
(1) Akbar (2) Shah Jahan
(3) Jahangir (4) Babur

31. Name the Commission that came to India in 1928 to reform India's constitutional system.
(1) Rowlatt Act
(2) Pitt's India Act
(3) Partition of Bengal
(4) Simon Commission

32. ..... is an example of intrusive igneous rock.
(1) Conglomerate
(2) Shale
(3) Sandstone
(4) Granite

33. The longitudinal valley lying between lesser Himalaya and the ..... are known as Duns.
(1) Himadri (2) Himachal
(3) Shivaliks (4) Tibet

34. A multicellular organism grows by ..... .
(1) cell addition (2) cell explosion
(3) cell implosion (4) cell division

35. The male sex organs in a flower is the ..... .
(1) zoospores (2) stamen
(3) pistil (4) chlorophyceae

36. In animals like Annelids, Molluscs, organs have associated to form functional system, each system concerned with a specific physiological function. This pattern is called ..... system level of organisation.
(1) organ (2) open
(3) closed (4) coelom

37. Contact force is another name for ..... .
(1) Friction force
(2) Magnetic force
(3) Electrostatic force
(4) Muscular force

38. The force of friction between two surfaces will increase if:
(1) a layer of lubricant is kept between the two surfaces
(2) the two surfaces are pressed harder
(3) air gap is created between the two surfaces
(4) irregularities on both the surfaces are removed

39. An absolute ..... contains the complete address of a file on the Internet.
(1) JavaScript (2) URL
(3) SQL (4) String

40. A change in which no new substances are formed is called .....
(1) Physical Change
(2) Chemical Change
(3) Rusting
(4) Galvanisation

41. The property of metal by which it can be drawn into wires is called ..... .
(1) maleability
(2) viscosity
(3) ductility
(4) tensile strength

42. ..... is the number of deaths in the population during a given period.
(1) Natality (2) Mortality
(3) Immigration (4) Emigration

43. ..... scheme by the Central Government aims at setting up an organised rural Panchayat in order to make the villages more self-sustained.
(1) Gram Uday Se Bharat Uday Abhiyan
(2) Pradhan Mantri Ujjwala Yojana
(3) Pradhan Mantri Surakshit Matritva Yojana
(4) Vidyanjali Yojana

44. Who discovered Circulatory System?
(1) Thomas Edison
(2) William Harvey
(3) Robert Hooke
(4) Robert Boyles

45. Which country did India lose to in the semi finals of the Men's Cricket World Cup 2015?
(1) Sri Lanka
(2) New Zealand
(3) Pakistan
(4) Australia

46. Buland Darwaza is located in:
(1) West Bengal
(2) Gujarat
(3) Uttar Pradesh
(4) Tamil Nadu

47. Which of the following award is given for distinguished service in any field including service rendered by the Government servants?
(1) Ashok Chakra
(2) Dada Saheb Phalke Awards
(3) Arjuna Award
(4) Padma Shri

48. Which of the statements given below are correct?
1. The author of 'Great Indian Novel' is A.P.J. Abdul Kalam.
2. The author of 'A Foreign Policy for India' is I.K. Gujral.
3. 'Wings of Fire' is an Autobiography of A.P.J. Abdul Kalam.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

49. In April 2017, diplomatic ties were re-established after 37 years between Cuba and ..... .
(1) India (2) Morocco
(3) Sri Lanka (4) USA

50. Nepal shares a border with which other country besides India?
(1) China (2) Bhutan
(3) Bangladesh (4) Afghanistan

PART-III
(QUANTITATIVE APTITUDE)

51. What least number must be added to 213, so that the sum is completely divisible by 9?
(1) 3 (2) 2
(3) 1 (4) 4

52. A can do a work in 12 days and B in 24 days. If they work on it together for 4 days, then what fraction of work is left?

(1) $\frac{1}{3}$ (2) $\frac{1}{2}$

(3) $\frac{1}{4}$ (4) $\frac{1}{5}$

53. What is the area (in cm^2) of an equilateral triangle of side 6 cm?

(1) $36\sqrt{3}$ cm^2 (2) 9 cm^2

(3) 36 cm^2 (4) $9\sqrt{3}$ cm^2

54. What is the effective discount on two successive discounts of 20% and 25%?

(1) 45% (2) 40%

(3) 50% (4) 60%

55. Profit of ₹ 12,400/- has to be divided between three partners A, B and C in the ratio 5 : 7 : 8. How much does B get (in ₹)?

(1) ₹ 4,340/- (2) ₹ 3,440/-

(3) ₹ 3,340/- (4) ₹ 4,430/-

56. The average weight of P, Q and R is 47 kg. If the average weight of P and Q be 32.5 kg and that of Q and R be 48.5 kg, then what is the weight of Q (in kg)?

(1) 25 kg (2) 21 kg

(3) 29 kg (4) 33 kg

57. A shopkeeper by selling 5 items, earns a profit equal to the selling price of 1 item. What is his profit percentage?

(1) 20% (2) 25 %

(3) 16 % (4) 22.5 %

58. What is the value of 20% of 500% of 50?

(1) 0.5 (2) 5000

(3) 500 (4) 50

59. To cover a distance of 90 km in 2.5 hours what should be the average speed of the car in meters/second?

(1) 10 m/sec (2) 20 m/sec

(3) 30 m/sec (4) 40 m/sec

60. If in 3 years at simple interest the principal increases by 18%, what will be the compound interest (in ₹) earned on ₹ 25,000/- in 3 years at the same rate?

(1) ₹ 4,775.4 (2) ₹ 5,774.4

(3) ₹ 4,557.4 (4) ₹ 5,575.4

61. If $5x + 6(3 - 2x) = 4$, then what is the value of x?

(1) 1 (2) 3

(3) 2 (4) 4

62. If $a + b = 1$ and $ab = -6$, then what is the value of $a^3 + b^3$?

(1) 17 (2) 15

(3) 19 (4) 13

63. The sum of a non-zero number and twenty times its reciprocal is 9. What is the number?

(1) – 5 (2) 3

(3) – 3 (4) 5

64. If the 3rd and the 5th term of an arithmetic progression are 13 and 21, what is the 13th term?

(1) 53 (2) 49

(3) 57 (4) 61

65. What is the reflection of the point (3, –5) in the origin?

(1) (–3, –5) (2) (5, –3)

(3) (– 5, –3) (4) (–3, 5)

66. Point P is the midpoint of segment AB. Co-ordinates of P are (5, – 1) and A are (2, – 4). What are the co-ordinates of point B?

(1) (6, 4) (2) (8, 2)

(3) (1, – 2) (4) (– 6, – 2)

67. What is the slope of the line perpendicular to the line passing through the points (– 2, 3) and (2, 0)?

(1) $\frac{4}{3}$ (2) $\frac{3}{4}$

(3) $-\frac{3}{4}$ (4) $-\frac{4}{3}$

68. ΔABC is similar to ΔPQR. If ratio of perimeters of ΔABC and ΔPQR is 1 : 2 and if PQ = 10 cm, then what is the length of AB (in cm)?

(1) 5 cm (2) 20 cm

(3) 25 cm (4) 15 cm

69. What is the value of sin 30° + cos 30°?

(1) $\frac{(\sqrt{6}+1)}{\sqrt{3}}$ (2) $\frac{(\sqrt{3}+2)}{\sqrt{3}}$

(3) $\frac{(1+\sqrt{3})}{2}$ (4) $\frac{5}{\sqrt{3}}$

70. ΔABC is right angled at B. If $m\angle A = 30°$, then sec C =?

(1) $\frac{1}{2}$ (2) $\frac{1}{\sqrt{2}}$

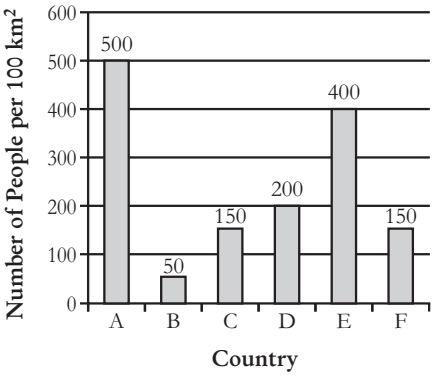
(3) 2 (4) $\frac{1}{\sqrt{3}}$

71. If $\sin\theta = \frac{12}{13}$, then what is the value of $\cot\theta$?

(1) $\frac{13}{12}$ (2) $\frac{5}{13}$

(3) $\frac{5}{12}$ (4) $\frac{13}{5}$

Directions (72–75): The bar graph shows the population density of 6 countries. Study the diagram and answer the following questions.



72. What is the ratio of the population densities of Country C to Country D?

(1) 3 : 4 (2) 4 : 3

(3) 5 : 4 (4) 4 : 5

73. What is the difference in the average number of people living per 1,000 km^2 in countries E and F?

(1) 250 (2) 4000

(3) 400 (4) 2500

74. Population density of Country E is greater than population density of Country D by:

(1) 50% (2) 100%

(3) 200% (4) 300%

75. If area of Country B is 20,00,000 km^2, what is its population?

(1) 10000000 (2) 2500000

(3) 25000000 (4) 1000000

PART-IV
(ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. The phone that (1)/ my father bought is different (2)/ than your. (3)/ No error (4)

77. As soon as (1)/ reach my office (2)/ I will mail you the files. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. Because she had a ..... demeanour, she was a desirable friend.
(1) pleasant (2) severe
(3) mean (4) nasty

79. If your child has not met the ..... vaccination requirements, he or she will not be allowed to attend public school.
(1) optional (2) referral
(3) compulsory (4) guideline

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Stymie
(1) Explicate (2) Abet
(3) Impede (4) Aid

81. Suffix
(1) Addition (2) Basic
(3) Root (4) Focal

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Sultry
(1) Frigid (2) Muggy
(3) Sticky (4) Soggy

83. Supple
(1) Flexible (2) Brittle
(3) Pliable (4) Bending

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. Barking up the wrong tree
(1) Scolding the one who is innocent
(2) Expecting a favour from a heartless person
(3) Looking in the wrong place
(4) Requesting but in an arrogant manner

85. Call it a day
(1) To start a job wishing for success
(2) To take a break or a holiday
(3) Assign different days to different tasks
(4) To declare the end of a task

Directions (86–87): Improve the **bold** part of the sentence.

86. Would you mind **to carrying** this bag for me.
(1) to carry
(2) carrying
(3) carry
(4) No improvement

87. The child **would have jumped** with delight on seeing the joker at the circus.
(1) jumping
(2) jumped
(3) to jump
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

88. The quality or state of being exposed to the possibility of being attacked or harmed.
(1) Vigour (2) Vulnerability
(3) Fortitude (4) Clout

89. A solemn promise or undertaking
(1) Pledge (2) Deceit
(3) Myth (4) Perjury

Directions (90–91): In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

90. (1) Consenssus (2) Concensus
(3) Concenssus (4) Consensus

91. (1) Presedents (2) Pricedents
(3) Precedents (4) Prisedents

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. They had been thrown
X. upon their own exertions at an
Y. battle to fight with poverty and ignorance
Z. early age, and had a hard
(1) XZY (2) YXZ
(3) ZYX (4) XYZ

93. The unstated assumption is
X. conceding spatial autonomy
Y. that the grant of a different time
Z. zone is only the first temporal step towards
(1) ZXY (2) XZY
(3) YXZ (4) YZX

94. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
My friends are going to watch a movie tonight.
(1) A movie is going to be watched by my friends tonight
(2) My friends will have watch a movie by tonight
(3) A movie was going to be watched by my friends tonight
(4) My friends will have to watch a movie by tonight

95. In the following question, a sentence has been given in Direct/ Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
"What time does the flight arrive?" she asked the receptionist.
(1) She asked the receptionist what time the flight arrived.
(2) She asked the receptionist what time the flight arrive.
(3) She asked the receptionist when does the flight arrive.
(4) She asked the receptionist what was going to be the time for the flights arrival.

Directions (96–100): A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Due to poor rainfall over the past few months, the vadu mangai season is expected to be short this year. There are two distinct varieties available in the vicinity of Coimbatore. The closest to Coimbatore and the one that appears in the markets first, is the Thadagam variety. The second and more popular variety is the one from the Thirumoorthy Hills, near Udumalpet. Representatives from commercial pickle brands whisk these mangais away in big lots directly from the wholesalers. Only a small protion of the year's harvest trickles down to the local markets.

Small vendors bring sacks full of these tiny tender mangoes to one particular street corner in Ram Nagar during the season. The corner of Rajaji Road and Sathyamurthy Road plays host to these vendors from as early as 7:00 am every day. Depending on the quantity they have, the mangais are available until around 11:00 am. If the vendors have a good day and their produce is sold quickly, they pack up and leave even as early as 9:00 am.

96. What do you think 'Thadagam' is from the passage?
(1) A Festival celebrated in Coimbatore.
(2) A variety of vadu mangai mangoes.
(3) A word for 'monsoon' in the local language.
(4) A variety of mango pickle.

97. Why do local markets get only a small portion of the mango produce?
(1) Commercial pickle companies buy the mangoes in huge quantities.
(2) The mangoes get sold as quickly as 9:00 am.
(3) There are only three vendors in the local market.
(4) The sellers of the local market are just small vendors.

98. What may happen if there is adequate rainfall?
(1) Local vendors will get fewer mangoes.
(2) The vadu mangai season will be longer that year.
(3) Commercial pickle companies will buy in smaller quantities.
(4) Vendors will be able to sell quickly.

99. The more popular vadu mangai mangoes are from :
(1) Udumalpet
(2) Coimbatore
(3) Thirumoorthy Hills
(4) Ram Nagar

100. Which of the following best describes the vadu mangai mangoes?
(1) Big and juicy
(2) Orange but raw
(3) Tiny and tender
(4) Sour and sweet

Short Answers

1. (2)	**2.** (4)	**3.** (1)	**4.** (4)	**5.** (2)	**6.** (4)	**7.** (2)	**8.** (1)	**9.** (1)	**10.** (4)
11. (2)	**12.** (2)	**13.** (3)	**14.** (4)	**15.** (4)	**16.** (3)	**17.** (1)	**18.** (4)	**19.** (2)	**20.** (1)
21. (2)	**22.** (2)	**23.** (1)	**24.** (1)	**25.** (1)	**26.** (1)	**27.** (2)	**28.** (4)	**29.** (1)	**30.** (2)
31. (4)	**32.** (4)	**33.** (3)	**34.** (4)	**35.** (2)	**36.** (1)	**37.** (4)	**38.** (2)	**39.** (2)	**40.** (1)
41. (3)	**42.** (2)	**43.** (1)	**44.** (2)	**45.** (4)	**46.** (3)	**47.** (4)	**48.** (2)	**49.** (2)	**50.** (1)
51. (1)	**52.** (2)	**53.** (4)	**54.** (2)	**55.** (1)	**56.** (2)	**57.** (2)	**58.** (4)	**59.** (1)	**60.** (1)
61. (3)	**62.** (3)	**63.** (4)	**64.** (1)	**65.** (4)	**66.** (2)	**67.** (1)	**68.** (1)	**69.** (3)	**70.** (3)
71. (3)	**72.** (1)	**73.** (4)	**74.** (2)	**75.** (1)	**76.** (3)	**77.** (4)	**78.** (1)	**79.** (3)	**80.** (3)
81. (1)	**82.** (1)	**83.** (2)	**84.** (3)	**85.** (4)	**86.** (2)	**87.** (2)	**88.** (2)	**89.** (1)	**90.** (4)
91. (3)	**92.** (1)	**93.** (4)	**94.** (1)	**95.** (1)	**96.** (2)	**97.** (1)	**98.** (2)	**99.** (3)	**100.** (3)

Hints & Solutions

Part-I
(General Intelligence & Reasoning)

1. (2) As, 'Spring' is related to 'Spiral', similarly 'Bangle' is related to 'Circle'.

2. (4) W U V (–3, –3, –3) T R S ; Q O P (–3, –3, –3) **N L M**

3. (1) 7.25 : 7.75 :: 9 : 9.5 (+ 0.5, + 0.5)

4. (4) Except 'housefly' all others are different birds.

5. (2) R $\xrightarrow{-1}$ Q $\xrightarrow{+2}$ S
X $\xrightarrow{-1}$ W $\xrightarrow{-1}$ V

6. (4) Except '640', all other options are the multiples of 25.

7. (2) In each next term, the position of alphabet 'O' shifts to the right by one place.

M $\xrightarrow{-1}$ L $\xrightarrow{+2}$ N
F $\xrightarrow{-1}$ E $\xrightarrow{+2}$ G

8. (1) ZYX VUT QPO MLK HGF **DCB**
–2 –3 –2 –3 –2

9. (1)
400 ÷4 –200 100 ÷4 **–50** 25 –12.5
÷4 ÷4

10. (4) Number of days from 29th May to 17th November
= 2 + 30 + 31 + 31 + 30 + 31 + 17
= 172
= 172 ÷ 7
= 24 weeks + 4 odd days
Number of odd days = 4
∴ Required day = Monday + 4
= Friday

11. (2) Weight cannot be form from the given weight (kg) = 200

12. (2) There is no 'A' letter in the given word.
∴ The word TEAMS cannot be formed.

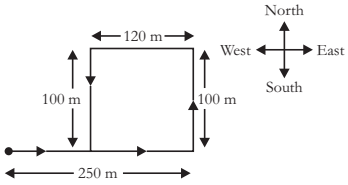
13. (3)
I M P L O R E
–2 –2 –2 –2 –2 –2 –2
G K N J M P C

H U B
–2 –2 –2
F S Z

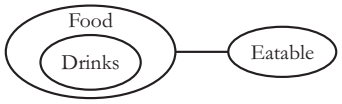
14. (4) 72 × 9 – 14 + 2 = ?
Changing signs according the question,
72 ÷ 9 + 14 × 2 = ?
8 + 28 = ?
36 = ?

15. (4) As, 52 % 32 ⇒ 52 – 32 = 20
⇒ 20 × 2 = 40
22 % 20 ⇒ 22 – 20 = 2
⇒ 2 × 2 = 4
Similarly,
15 % 11 ⇒ 15 – 11 = 4
⇒ 4 × 2 = **8**

16. (3) $(6)^3 = 216$
$(2)^4 = 16$
∴ $(7)^2 = 49$
$(7)^? = (7)^2$
? = **2**

17. (1)


∴ Required distance = 250 – 120
= 130 m East

18. (4)


19. (2) Cube given against option (2) cannot be formed.

20. (1) Indians who are collectors can be represented by the letter common to the circle and the triangle. Such letter is C. Indians who are women can be represented by the letters common to the circle and the rectangle. Such letters are A and B.

21. (2)


22. (2)


23. (1)


24. (1)


25. (1) P → **58**, 65
L → **14**
O → 55, **57**
T → **87**
For given word PLOT, group of letters can be represented by the numbers → 58, 14, 57, 87

PART-II
(GENERAL AWARENESS)

26. (1) In economics, normal goods are any goods for which demand increases when income increases and falls when income decreases but price remains constant.

27. (2) Short-run marginal cost refers to the change in cost that result from a change in output when the usage of the variable factor changes. Short-run marginal cost curve cuts the average variable cost curve from below at the minimum point of average variable cost.

28. (4) The Concurrent List or List-III (Seventh Schedule) is a list of 52 items (though the last item is numbered 47) given in the Seventh Schedule to the Constitution of India. The legislative section is divided into three lists: Union List, State List and Concurrent List. Forests are listed under Concurrent List.

29. (1) Article 14 of the Indian Constitution say, "The State shall not deny to any person equality before the law or equal protection of the laws within the territory of India." The right to 'equal protection of the laws' contained in Art. 14 mean the right to equal treatment of persons in equal circumstances. It is available to citizens as well as non-citizens.

30. (2) Shah Jahan fell ill in 1658 and Dara Shikoh, his eldest son, assumed the role of regent due to Shah Jahan's inability to manage the court. This angered Shah Jahan's other sons who rebelled against their brother. Aurangzeb, the emperor's third son, overpowered all of his brothers and placed Shah Jahan under house arrest in Agra Fort.

31. (4) The British government appointed the Simon Commission in 1927 for enquiry into the working of the Montagu-Chelmsford Reforms headed by Sir John Simmon. The Indian National Congress, at its December 1927 meeting in Madras, resolved to boycott the Commission and challenged Lord Birkenhead, the Secretary of State for India, to draft a constitution that would be acceptable to the Indian public.

32. (4) Intrusive igneous rocks crystallize below Earth's surface and the slow cooling that occurs there allows large crystals to form. Examples are diorite, gabbro, granite, pegmatite and peridotite.

33. (3) Duns are longitudinal valleys formed as a result of folding when Eurasian plate and Indian plate collided. They are formed between Lesser Himalayas and Shivaliks.

34. (4) Cell division, also called mitosis, occurs in all living things. Some single-celled organisms use a type of mitosis as their only form of reproduction. In

multicellular organisms, cell division allows individuals to grow and change by expanding the number of total cells.

35. (2) Carpels and stamens comprise the sex organs of the flower. The carpal is the female part that produces the eggs and the stamen is the male part that produces the pollen.

36. (1) In animals where organs have associated to form functional systems where each system is concerned with a specific physiological function are said to exhibit organ system level of organisation. Examples are Annelids, Arthropods, Molluscs, Echinoderms and Chordates.

37. (4) Contact force is a force that is applied by objects in contact with each other. Contact force acts on a point of direct contact between the two objects.

38. (2) **Friction (Frictional Force):** It is the force that acts between two surfaces in contact. The force of friction between two surfaces will increase if the two surfaces are pressed harder.

39. (2) A URL specifies the location of a target stored on a local or networked computer. The target can be a file, directory, HTML page, image, program, and so on.

40. (1) Physical changes occur when objects or substances undergo a change that does not change their chemical composition.

41. (3) Ductility is a physical property of a material associated with the ability to be hammered thin or stretched into wire without breaking. A ductile substance can be drawn into a wire. Examples are gold, silver, copper, erbium, terbium and samarium.

42. (2) **Mortality Rate:** It is a measure of the number of deaths (in general, or due to a specific cause) in a particular population, scaled to the size of that population, per unit of time.

43. (1) **Gram Uday Se Bharat Uday Abhiyan (Village Self Governance Campaign):** It aims to generate nation-wide efforts to increase social harmony across villages, strengthen Panchayati Raj, promote rural development and foster farmers' progress. It was launched on the occasion of 125th birth anniversary of Dr. Babasaheb Ambedkar at his birthplace at Mhow, Madhya Pradesh.

44. (2) **William Harvey (1578–1657):** The father of modern physiology, was the first researcher to discovery the circulation of blood through the body. He was also the first to suggest that humans and other mammals reproduced via the fertilisation of an egg by sperm.

45. (4) **Cricket World Cup 2015:** It was jointly hosted by Australia and New Zealand. Australia defeated New Zealand by 7 wickets to win their fifth ICC Cricket World Cup.

46. (3) **Buland Darwaza:** Loft gateway at Fatehpur Sikri was built by the great Mughal emperor, Akbar in 1601. Akbar built the Buland Darwaza to commemorate his victory over Gujarat. It is located in the Fatehpur Sikri, in the Agra district of the Uttar Pradesh.

47. (4) The Padma Awards are one of the highest civilian honours of India announced annually on the eve of Republic Day. The Awards are given in three categories: Padma Vibhushan (for exceptional and distinguished service), Padma Bhushan (distinguished service of higher order) and Padma Shri (distinguished service).

48. (2) • The Great Indian Novel is authored by Shashi Tharoor.

• A foreign policy for India is authored by I.K. Gujral.

• Wings of Fire: An Autobiography is written by APJ Abdul Kalam.

49. (2) Guided by the mutual will to develop friendly relations, Cuba and Morocco has signed an agreement to re-establish diplomatic ties after a time period of 37 years. Morocco severed its ties with Cuba in 1980 after Fidel Castro officially recognised Western Sahara as the independent Sahrawi Arab Democratic Republic (SADR). Morocco claims the territory as its own.

50. (1) Bordering China in the north and India in the south, east and west, Nepal is the largest sovereign Himalayan state. The border between China and Nepal is 1,236 kilometres in length.

PART-III (QUANTITATIVE APTITUDE)

51. (1) From the option (1).

$213 + 3 = 216$

216 is completely divisible by 9.

52. (2) A's 1 day work $= \frac{1}{12}$

B's 1 day work $= \frac{1}{24}$

(A + B)'s 1 day work $= \frac{1}{12} + \frac{1}{24}$

$= \frac{2+1}{24} = \frac{1}{8}$

(A + B)'s 4 days' work $= \frac{1}{8} \times 4 = \frac{1}{2}$

$\therefore$ Rest of the work $= 1 - \frac{1}{2} = \frac{1}{2}$

53. (4) Area of an equilateral triangle

$= \frac{\sqrt{3}}{4} (\text{side})^2$

$= \frac{\sqrt{3}}{4} (6)^2$

$= \frac{\sqrt{3}}{4} \times 36$

$= 9\sqrt{3}$ cm^2

54. (2) Successive discount

$= \left(20 + 25 - \frac{20 \times 25}{100}\right)$

$= (45 - 5)$

$= 40\%$

55. (1) Total profit = ₹ 12,400

Ratio of profit between A, B and C

$= 5 : 7 : 8$

$\therefore$ Share of B $= \frac{7}{20} \times 12400$

= ₹ 4,340

56. (2) Total weight of P, Q and R

$= 47 \times 3 = 141$ kg

or, $P + Q + R = 141$ ... (i)

Total weight of P and Q

$= 32.5 \times 2 = 65$ kg

or, $P + Q = 65$ ... (ii)

Total weight of Q and R

$= 48.5 \times 2 = 97$ kg

or, $Q + R = 97$ ... (iii)

From equations (i) and (iii),

$P + 97 = 141$

$P = 141 - 97$

$P = 44$

From equation (ii),

$44 + Q = 65$

$Q = 65 - 44$

$Q = 21$ kg

57. (2) Profit = S.P. of 5 items – C.P. of 5 items

1 S.P. = 5 S.P. – 5 C.P.

5 C.P. = 4 S.P.

or, $\frac{\text{C.P.}}{\text{S.P.}} = \frac{4}{5}$

The shopkeeper makes 5 units out of 4 units. He gains 1 on 4.

∴ Required percentage

$= \frac{1}{4} \times 100 = 25\%$

58. (4) Required value = 20% of 500% of 50

$= \frac{20}{100} \times \frac{500}{100} \times 50 = 50$

59. (1) Distance = 90 km

Time = 2.5 hours

$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$

$= \frac{90}{2.5} = 36$ km/h

$= \left(36 \times \frac{5}{18}\right)$

$= 10$ m/sec

60. (1) Principal Amount = ₹ x

Time = 3 years

$\text{S.I.} = x \times \frac{18}{100} = \frac{18x}{100}$

$\text{S.I.} = \frac{\text{P} \times \text{R} \times \text{T}}{100}$

$\text{R} = \frac{\text{S.I.} \times 100}{\text{P} \times \text{T}}$

$= \frac{\frac{18x}{100} \times 100}{x \times 3} = 6\%$

$\text{C.I.} = \text{P}\left[\left(1 + \frac{r}{100}\right)^n - 1\right]$

$= 25000\left[\left(1 + \frac{6}{100}\right)^3 - 1\right]$

$= 25000\left[\left(\frac{53}{50}\right)^3 - 1\right]$

$= 25000\left[\frac{(53)^3 - (50)^3}{(50)^3}\right]$

$= \frac{25000(53-50)(53^2 + 50^2 + 53 \times 50)}{50 \times 50 \times 50}$

$= \frac{25000(3)(2809 + 2500 + 2650)}{50 \times 50 \times 50}$

$= \frac{25000 \times 3 \times 7959}{50 \times 50 \times 50} = ₹\ 4775.4$

61. (3) $5x + 6(3 - 2x) = 4$

$5x + 18 - 12x = 4$

$-7x + 18 = 4$

$-7x = 4 - 18$

$-7x = -14$

$x = 2$

62. (3) $(a + b) = 1$, $ab = 6$

$(a + b)^2 = a^2 + b^2 + 2ab$

$(1)^2 = a^2 + b^2 + 2(-6)$

$a^2 + b^2 = 1 + 12 = 13$

$a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$

$= 1 \times (13 + 6) = 19$

63. (4) Number = x

According to question,

$x + \frac{20}{x} = 9$

$x^2 + 20 = 9x$

$x^2 - 9x + 20 = 0$

$x^2 - 5x - 4x + 2 = 0$

$(x - 4)(x - 5) = 0$

∴ $x = 4, 5$

64. (1) First term = a and common difference = d of an A.P.

$A_3 = a + (3 - 1)d$

$13 = a + 2d$ ... (i)

$A_5 = a + (5 - 1)d$

$21 = a + 4d$ ... (ii)

On solving equations (i) and (ii),

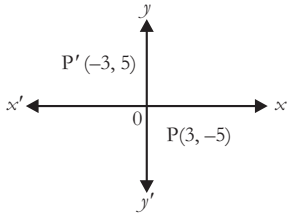
$a = 5$ and $d = 4$

∴ $A_{13} = a + (13 - 1)d$

$A_{13} = 5 + 12 \times 4$

$A_{13} = 5 + 48 = 53$

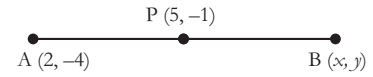
65. (4)



Reflection of point (x, y) in origin $= (-x, -y)$

∴ Reflection of point $(3, -5)$ in origin $= (-3, 5)$

66. (2)



Let co-ordinates of point = (x, y)

Then,

$\frac{2 + x}{2} = 5$

$\Rightarrow 2 + x = 10$

$\Rightarrow x = 8$

$\frac{-4 + y}{2} = -1$

$\Rightarrow -4 + y = -2$

$y = 2$

∴ $(x, y) = (8, 2)$

67. (1) $(x_1, y_1) = (-2, 3)$

$(x_2, y_2) = (2, 0)$

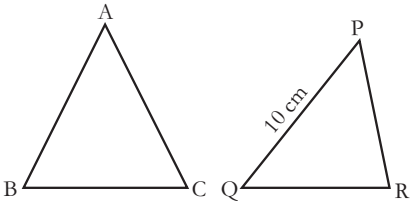
$m_1 = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - 3}{2 + 2}$

$= \frac{-3}{4}$

∵ $m_1 m_2 = -1$

∴ $m_2 = \frac{-1}{m_1} = \frac{4}{3}$

68. (1) $\Delta ABC \sim \Delta PQR$



$\frac{\text{Perimeter of } \Delta ABC}{\text{Perimeter of } \Delta PQR} = \frac{AB}{PQ}$

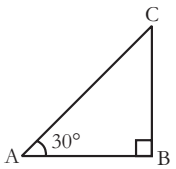
$= \frac{1}{2} = \frac{AB}{10}$

∴ $AB = \frac{10}{2} = 5$m

69. (3) $\sin 30° + \cos 30° = \frac{1}{2} + \frac{\sqrt{3}}{2}$

$= \frac{1 + \sqrt{3}}{2}$

70. (3) In ΔABC,



$\angle A = 30°, \angle B = 90°$

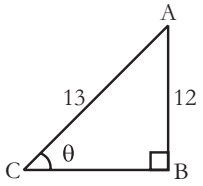
$\angle C = 180° - (90° + 30°)$

$\angle C = 180° - 120°$

$\angle C = 60°$

$\therefore$ $\sec C = \sec 60° = 2$

71. (3) $\sin \theta = \frac{12}{13}$



In ΔABC,

$AC^2 = AB^2 + BC^2$

$BC^2 = 13^2 - 12^2$

$BC = \sqrt{169 - 144}$

$BC = \sqrt{25} = 5$

$\therefore$ $\cot \theta = \frac{BC}{AC} = \frac{5}{13}$

72. (1) Required ratio $= \frac{150}{200} = 3 : 4$.

73. (4) Number of people living per 1000 km^2 in Country E

$= \frac{400}{100} \times 1000 = 4000$

Number of people living per 1000 km^2 in Country F

$= \frac{150}{100} \times 1000 = 1500$

$\therefore$ Required difference

$= 4000 - 1500 = 2500$

74. (2) Required percentage

$= \frac{400 - 200}{200} \times 100$

$= \frac{200}{200} \times 100 = 100\%$

75. (1) Area of Country B

$= 20,00,000\ km^2$

Density of Country B

$= 50$ per $100\ km^2$

$\therefore$ Population of Country B

= Area × Density

$= 2000000 \times 50$

$= 10000000$

PART-IV (ENGLISH LANGUAGE)

76. (3) In the given sentence, part (3) has an error. To correct the sentence use 'yours' in place of 'your'.

77. (4) No correction is required. Sentence is correct.

78. (1) **Pleasant (Adjective):** cheerful, happy.

79. (3) **Compulsory (Adjective):** obligatory; mandatory.

80. (3) **Stymie/Impede (Verb):** hinder; obstruct; interfere.

Sentence → Changes stymied new medical treatments.

81. (1) **Suffix (Noun):** a morpheme (– ion, able) added at the end of a word.

Addition (Noun): Something added.

82. (1) Opposite of Sultry is:

Frigid (Adjective): Unresponsive; cold.

83. (2) Opposite of Supple is:

Brittle (Adjective): easily breakable.

Sentence → Glass is brittle.

84. (3) **Looking in the wrong place**

Sentence → She thinks it will solve the problem. But I think she is barking up the wrong tree.

85. (4) **To declare the end of task**

Look at the sentence:

It is time for M.S. Dhoni to call it a day.

86. (2) For improvement of sentence use 'carrying' in place of 'to carrying'.

87. (2) For improvement of sentence use 'jumped' in place of 'would have jumped'.

88. (2) Best substitute of the sentence is

Vulnerability (Noun): Is the quality of being easily hurt or attacked.

Sentence → Old people are often particularly vulnerable members of our society.

89. (1) Best substitute of the sentence is

Pledge (Noun): a formal promise or agreement.

Sentence → The Government has pledged ₹ 25,000 to help the victims of the crash.

90. (4) Correctly spelt word → Consensus

91. (3) Correctly spelt word → Precedents

92. (1) Logical order of the sentences to form a coherent paragraph → XZY

93. (4) Logical order of the sentences to form a coherent paragraph → YZX

94. (1) Passive/Active Voice

• A movie is going to be watched by my friends tonight.

It is active voice of Present Continuous but with to-infinitive formation.

95. (1) Indirect/Direct speech

• She asked the receptionist what time the flight arrived.

• This is direct speech of an interrogative sentence.

96. (2) Thadagam is a variety of vadu mangai mangoes.

97. (1) Local markets get only a small portion of the mango produce because the commercial pickle companies buy the mangoes in huge quantities.

98. (2) On adequate rainfall the vadu mangai season will be longer that year.

99. (3) The more popular vadu mangai mangoes are from Thirumoorthy Hills, near Udumalpet.

100. (3) Vadu mangai mangoes are best describes as tiny and tender.

❑❑❑

6

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 19 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Product : Multiplication : : Sum : ?
(1) Comparison (2) Percentage
(3) Numbers (4) Addition

2. FHK : DFI : : OQT : ?
(1) NPS (2) PRT
(3) MOR (4) QSV

3. 10001 : 10101 : : 101 : ?
(1) 11 (2) 201
(3) 100 (4) 121

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Trousers (2) Shirt
(3) Pants (4) Shorts

5. (1) EHK (2) ZBD
(3) LOR (4) SVY

6. (1) 10 (2) 20
(3) 15 (4) 30

Directions (7–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

7. win, note, grain, broker, ?
(1) refund (2) pony
(3) banking (4) mutually

8. KlMnO, qRsTu, WxYzA, cDeFg, ?
(1) iJKLm (2) HiJkL
(3) IjKlM (4) hIjKI

9. 0, 3, 8,?, 24, 35
(1) 15 (2) 16
(3) 18 (4) 9

10. Faiyaz's birthday is on Wednesday 12th April. On what day of the week will be Shray's birthday in the same year if Shray was born on 2nd October?
(1) Monday (2) Saturday
(3) Wednesday (4) Sunday

11. The weights of 4 boxes are 20, 90, 40 and 60 kg. Which of the following cannot be the total weight, in kilograms, of any combination of these boxes and in a combination a box can be used only once?
(1) 210 (2) 170
(3) 190 (4) 200

12. From the given words, select the word which cannot be formed using the letters of the given word.
SMOTHERS
(1) THOSE (2) METRO
(3) STORE (4) TEARS

13. If FRISKED is coded as HTKUMGF, then how will SUN be coded as?
(1) UWP (2) RGZ
(3) KMJ (4) ZBF

14. In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
80 + 2 ÷ 25 + 5 – 10 = ?
(1) 35 (2) 98
(3) 36 (4) 45

15. If 45% 11 = 7, 59% 34 = 7, then what is the value of 55% 4 = ?
(1) 6 (2) 40
(3) 45 (4) 50

16. Select the missing number from the given responses.

102	89	?
87	45	25
15	44	52

(1) 13 (2) 25
(3) 77 (4) 15

17. Two cars C and D start from the same point. C travels 9 km South, then turns to its left and travels another 11 km. D travels 3 km East, then turns South and travels 5 km, then turns to its left and travels another 8 km. Where is D with respect to C now?
(1) 4 km South (2) 14 km North
(3) 4 km North (4) 14 km South

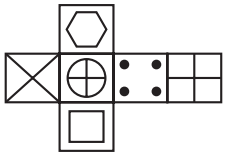
18. In the question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument?

Statements:
Should street lights be switched off after midnight?

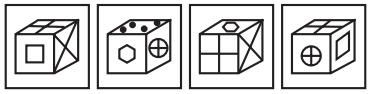
Arguments:
I. No, statistics show that crime and accidents increase if street lights are switched off.
II. Yes, few vehicles ply after midnight, expensive electricity will be wasted.
(1) If only argument I is strong
(2) If only argument II is strong
(3) If both arguments I and II are strong
(4) If neither argument I nor II is strong

19. Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?

Question Figure

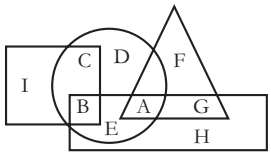


Answer Figures



(1) (2) (3) (4)

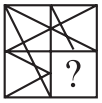
20. In the following figure, square represents Painters, triangle represent Women, circle represents Accountants and rectangle represents Americans. Which set of letters represents Americans who are not Accountants?



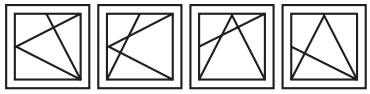
(1) D, C, H (2) G, H
(3) G, B, E (4) D, A

21. Which answer figure will complete the pattern in the question figure?

Question Figure



Answer Figures

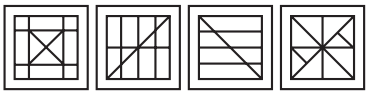


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

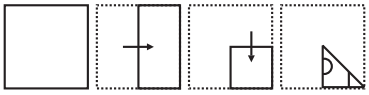
Answer Figures



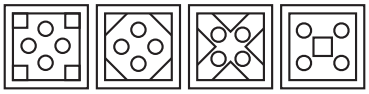
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figure



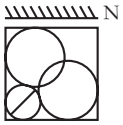
Answer Figures



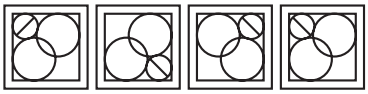
(1) (2) (3) (4)

24. If a mirror is placed on the line MN, then which of the answer figure is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'K' can be represented by 42, 34, etc. and 'Z' can be represented by 76, 59 etc. Similarly, you have to identify the set for the word 'SELF'.

Matrix-I

	0	1	2	3	4
0	H	H	D	I	C
1	D	A	H	I	G
2	B	K	K	E	L
3	G	H	A	B	K
4	A	F	K	C	D

Matrix-II

	5	6	7	8	9
5	O	V	T	N	Z
6	V	Q	R	S	Q
7	V	Z	U	Q	S
8	O	P	T	O	N
9	S	N	Y	V	O

(1) 95, 23, 24, 41
(2) 44, 43, 87, 95
(3) 04, 31, 85, 58
(4) 24, 04, 66, 77

PART-II (GENERAL AWARENESS)

26. The collection of all possible combinations of the goods and services that can be produced from a given amount of resources and a given stock of technological knowledge is called the ..... of the economy.
(1) Resource Probability Set
(2) Production Probability Set
(3) Resource Possibility Set
(4) Production Possibility Set

27. If at a price, market supply is greater than market demand, we say that there is ..... in the market at that price.
(1) Equilibrium
(2) Excess Demand
(3) Excess Supply
(4) Marginal Revenue

28. In which year was All India Anna Dravida Munnetra Kazhagam (AIADMK) founded?
(1) 1949 (2) 1999
(3) 1972 (4) 1997

29. Which Fundamental Right in the Indian Constitution includes equal access to shops, bathing ghats hotels etc?
(1) Right to Liberty and Personal Freedom
(2) Right to Freedom of Religion
(3) Right to Equality
(4) Cultural and Educational Rights

30. For how many days did Mahatma Gandhi's volunteers of the Salt Satyagrah walked?
(1) 24 (2) 36
(3) 12 (4) 6

31. The Tomar Rajputs were defeated in the middle of the twelfth century by the Chauhans of ..... .
(1) Ayodhya (2) Ajmer
(3) Dwarka (4) Gwalior

32. India is the ..... largest country in the world.
(1) 3^{rd} (2) 5^{th}
(3) 7^{th} (4) 9^{th}

33. The place on the earth's surface above the focus is called the ..... .
(1) focus (2) incentre
(3) epicentre (4) circumcentre

34. The male sex accessory ducts include vasa efferentia, epididymis, vas deferens and ..... .
(1) cervix
(2) rete testis
(3) glands
(4) seminiferous tubules

35. The meristem which occurs between mature tissues is known as ..... meristem.
(1) Intercalary (2) Primary
(3) Lateral (4) Apical

36. Which of the following Phylum are also called flatworms?
(1) Mollusca
(2) Chordata
(3) Ctenophora
(4) Platyhelminthes

37. In the formula average velocity $= \frac{(u+v)}{2}$, u is the .....
(1) final velocity
(2) initial displacement
(3) initial velocity
(4) final displacement

38. Vocal chords in women are ..... than vocal chords in men.
(1) 5 mm shorter
(2) 15 mm shorter
(3) 5 mm longer
(4) 15 mm longer

39. The web uses the ..... to request and serve web pages and programs.
(1) Hyper Text Marketing Language
(2) Hyper Text Markup Language
(3) Hotmail Text Markup Language
(4) Home Text Markup Language

40. What is the name of the acid in grapes?
(1) Lactic acid (2) Formic acid
(3) Acetic acid (4) Tartaric acid

41. Which fibre is also called as artificial silk?
(1) Nylon (2) Rayon
(3) Polyester (4) Acrylic

42. During the past century, the temperature of Earth has increased by ..... .
(1) 0.6° C (2) 1.6° C
(3) 2.6° C (4) 3.6° C

43. ..... scheme was launched by the Central Government to give financial services to weaker section of society.
(1) Sukanya Samridhi Yojana
(2) Bal Swachta Mission
(3) Pradhan Mantri Jan Dhan Yojana
(4) Beti Bachao Beti Padhao Yojana

44. Who discovered Uranus?
(1) Sir Isaac Newton
(2) William Henry Fox Talbot
(3) William Herschel
(4) Nicolaus Copernicus

45. Who was the host nation of 2015 Men's Rugby World Cup?
(1) New Zealand (2) South Africa
(3) Australia (4) England

46. Who started construction of Nalanda (Mahavihara)?
(1) Dharampala (2) Ashoka
(3) Kumaragupta (4) Harihara

47. Who is not amongst the winners of Nobel Prize 2016 for Chemistry?
(1) Jean-Pierre Sauvage
(2) J. Michael Kosterlitz
(3) Sir J. Fraser Stoddart
(4) Bernard L. Feringa

48. Which of the statements given below are correct?
1. The author of the novel "Missile Gap" is Charles Stross.
2. The author of the novel "Bird Box" is Victor LaValle.
3. The author of the novel "The City and the City" is China Mieville.
(1) 1 and 2 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

49. Which country was India's largest overseas investment destination in the year 2015–16?
(1) Mauritius (2) Switzerland
(3) Saudi Arabia (4) Australia

50. China does not share its border with which Indian state?
(1) Bihar
(2) Arunachal Pradesh
(3) Himachal Pradesh
(4) Sikkim

PART-III
(QUANTITATIVE APTITUDE)

51. What is the LCM of 64 and 56?
(1) 448 (2) 488
(3) 484 (4) 408

52. A and B together do a job in 6.75 days and A could do the job in 9 days if he worked alone. How many days would B take to do the job if he worked alone?
(1) 27 days (2) 18 days
(3) 24 days (4) 21 days

53. What is the diameter (in cm) of a sphere of surface area 154 cm^2?
(1) 3.5 cm (2) 14 cm
(3) 10.5 cm (4) 7 cm

54. A ₹ 100/- shirt is offered at 10% discount and a ₹ 300/- pair of trousers at 20% discount. If

Pritam bought 1 shirt and 3 pairs of trousers, what is the effective discount (in %) he got?
(1) 19% (2) 18%
(3) 17% (4) 16%

55. A's wealth is $\frac{5}{7}$ times of B's and C's is $\frac{10}{7}$ times of B's. What is the ratio of C's wealth to A's?
(1) (49 : 100) (2) (1 : 2)
(3) (2 : 1) (4) (100 : 49)

56. The average of four consecutive odd numbers is 64. What is the value of largest number?
(1) 65 (2) 69
(3) 71 (4) 67

57. If a wholesaler, sells a box of chocolates at ₹ 960/- he gains 20%. Now if he decides to sell it at ₹ 1,120/-, what is his profit percentage?
(1) 30% (2) 40%
(3) 50% (4) 60%

58. A man wills 25% of his wealth to charity and rest to his family. What percent of the wealth willed to charity does the family get?
(1) 200% (2) 33.3%
(3) 300% (4) 25%

59. If a person walks at 15 km/h instead of 9 km/h, he would have walked 3 km more in the same time. What is the actual distance (in km) travelled by him?
(1) 5.5 km (2) 6.5 km
(3) 4.5 km (4) 7.5 km

60. Ganesh invested an amount of ₹ x in a fixed deposit scheme offering 5% per annum for 1st year and 15% per annum for 2nd year and received an amount of ₹ 9,660/- after two years. What is the value of x (in ₹)?
(1) ₹ 9,000/- (2) ₹ 8,000/-
(3) ₹ 8,500/- (4) ₹ 8,200/-

61. If $\frac{\left[4\left(\frac{2x}{5}-\frac{3}{2}\right)\right]}{3}+\frac{7}{5}=\frac{37}{5}$, then what is the value of x?
(1) –15 (2) $\frac{7}{5}$
(3) 15 (4) $-\frac{7}{5}$

62. If $a - b = 4$ and $ab = -3$, then what is the value of $a^3 - b^3$?
(1) 21 (2) 28
(3) 23 (4) –20

63. Sum of twice a fraction and 3 times its reciprocal is $\frac{29}{3}$. What is the fraction?
(1) $\frac{2}{9}$ (2) $\frac{5}{4}$
(3) $\frac{4}{5}$ (4) $\frac{9}{2}$

64. The 7th and 12th term of an arithmetic progression are –15 and 5 respectively. What is the 16th term?
(1) 25 (2) 29
(3) 21 (4) 33

65. What is the reflection of the point (4, –3) in the line $y = -2$?
(1) (4, 1) (2) (–4, 1)
(3) (–4 , –1) (4) (4, –1)

66. The distance between the points (2, 7) and (k, – 5) is 13. What is the value of k?
(1) –7 (2) 7
(3) 6 (4) –6

67. What is the equation of the line perpendicular to the line $5x + 3y = 6$ and having y-intercept –3?
(1) $3x - 5y = 15$
(2) $3x + 5y = 15$
(3) $3x - 5y = -15$
(4) $3x + 5y = -15$

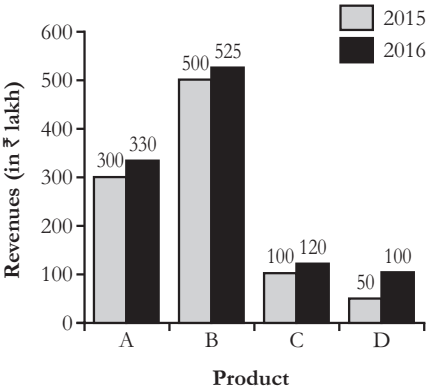
68. D and E are points on side AB and AC of ΔABC. DE is parallel to BC. If AD : DB = 2 : 5 and area of ΔADE is 8 cm^2, what is the area (in cm^2) of quadrilateral BDEC?
(1) 98 cm^2 (2) 94 cm^2
(3) 90 cm^2 (4) 86 cm^2

69. What is the value of $\sin 30° - \sqrt{2}\cos 30°$?
(1) $\frac{(1-\sqrt{6})}{\sqrt{2}}$ (2) $\frac{(1-\sqrt{6})}{2}$
(3) $\frac{(3-\sqrt{6})}{2}$ (4) $\frac{(3-\sqrt{6})}{\sqrt{2}}$

70. ΔXYZ is right angled at Y. If m ∠Z = 60°. What is the length (in cm) of YZ, if $ZX = 9\sqrt{3}$ cm?
(1) $3\sqrt{3}$ cm (2) $\frac{3\sqrt{3}}{2}$ cm
(3) $\frac{9\sqrt{3}}{2}$ cm (4) $\sqrt{3}$ cm

71. If $\sec\theta = \frac{13}{12}$, then what is the value of $\sin\theta$?
(1) $\frac{5}{13}$ (2) $\frac{12}{5}$
(3) $\frac{12}{13}$ (4) $\frac{5}{12}$

Directions (72–75): The bar graph shows revenues (in ₹ lakh) from selling four different products (A, B, C, D) by a certain company. Study the diagram and answer the following questions.



72. Revenues from which product were the least in both the years 2015 and 2016?
(1) D (2) A
(3) B (4) C

73. By what value (in %) the revenue from sale of product B in 2016 was greater than that of 2015?
(1) 0.5 (2) 5
(3) 25 (4) 2

74. By what amount (in ₹ crore) the total revenue by selling all the four products in 2016 is greater than that of 2015?
(1) ₹ 1 (2) ₹ 0.75
(3) ₹ 1.5 (4) ₹ 1.25

75. If the cost of producing and selling the four products was ₹ 10 crore each in 2015 and 2016 then what

is the cumulative profit (in ₹ lakh) earned in the years 2015 and 2016?
(1) ₹ 75 (2) ₹ 25
(3) ₹ 50 (4) ₹ 100

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. The boy who (1)/ sat close him (2)/ was his son. (3)/ No error (4)

77. When I returned I felt (1)/ a big cat brush side me (2)/ as I opened the door. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. Ever since Anita lost her job, she has done ..... but wallow in self-pity.
(1) none (2) nothing
(3) no (4) never

79. As I think back to my childhood, I ..... recall the fun summers on my grandfather's farm.
(1) wistfully (2) fiscally
(3) hopefully (4) awfully

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Pillage
(1) Bequeath (2) Consign
(3) Entrust (4) Desecrate

81. Cluster
(1) Individual (2) Assemblage
(3) Specific (4) Solitary

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Rampart
(1) Barricade (2) Fort
(3) Embankment (4) Ditch

83. Epidemic
(1) Contagious (2) Endemic
(3) Limited (4) Infectious

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. To have at one's fingertips
(1) to be very fast on the keyboard
(2) to be adroit with a percussion musical instrument
(3) recall of factual information at one's command
(4) to carefully note down minute details

85. To not have a clue
(1) To be extremely poor
(2) To fail an examination
(3) To lose confidence at the last moment
(4) To not know about something

Directions (86–87): Improve the **bold** part of the sentence.

86. Since when **have to start** a business been so easy?
(1) has started
(2) have starting
(3) has starting
(4) No improvement

87. Those films **being** made now.
(1) was being
(2) is being
(3) are being
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

88. Protection of or authority over someone
(1) Autonomous (2) Tutelage
(3) Nonaligned (4) Unaided

89. Optimistic in an apparently difficult situation
(1) Sanguine (2) Pallid
(3) Pessimistic (4) Sallow

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Actuasion (2) Actation
(3) Actasion (4) Actuation

91. (1) Motheatan (2) Mothaten
(3) Mothatan (4) Motheaten

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. We entered, and
X. had been assigned
Y. to each of us
Z. found that a hut
(1) YZX (2) YXZ
(3) ZXY (4) XZY

93. The resulting brain change is
X. concomitant of
Y. the sensation
Z. regarded as the true
(1) YZX (2) YXZ
(3) XZY (4) ZXY

94. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
Who taught you to ride?
(1) By whom is you taught to ride?
(2) By whom were you taught to ride?
(3) Riding by you was taught by who?
(4) Riding by you was taught by whom?

95. In the following question, a sentence has been given in Direct/ Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
Sheetal said to me, "How have you solved this problem?"
(1) Sheetal asked me how I had solved that problem.

(2) Sheetal asked me how I have solved that problem.
(3) Sheetal asked me how I had solved this problem.
(4) Sheetal asked me how I have solved this problem.

Directions (96–100): In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The woodpeckers of the West (with one exception) are different **...(96)...** those of the East, and so are the flycatchers, the grosbeaks, the orioles, the tanagers, the humming-birds, **...(97)...** many of the sparrows. **...(98)...** of the purple and bronzed grackles (the latter are **...(99)...** seen on the plains of Colorado, but are not common), the Rockies boast of Brewer's blackbird, **...(100)...** habits are not as prosaic as his name would indicate.

96. (1) for (2) from (3) of (4) to
97. (1) and (2) because (3) but (4) if
98. (1) Beside (2) Next (3) Instead (4) Near
99. (1) sometime (2) sometimes (3) at time (4) any time
100. (1) whose (2) who (3) whom (4) whoever

Short Answers

1. (4)	**2.** (3)	**3.** (3)	**4.** (2)	**5.** (2)	**6.** (3)	**7.** (3)	**8.** (3)	**9.** (1)	**10.** (1)
11. (4)	**12.** (4)	**13.** (1)	**14.** (4)	**15.** (1)	**16.** (3)	**17.** (3)	**18.** (1)	**19.** (4)	**20.** (2)
21. (1)	**22.** (4)	**23.** (1)	**24.** (4)	**25.** (1)	**26.** (4)	**27.** (2)	**28.** (3)	**29.** (3)	**30.** (1)
31. (2)	**32.** (3)	**33.** (3)	**34.** (2)	**35.** (1)	**36.** (4)	**37.** (3)	**38.** (3)	**39.** (2)	**40.** (4)
41. (2)	**42.** (1)	**43.** (3)	**44.** (3)	**45.** (4)	**46.** (3)	**47.** (2)	**48.** (3)	**49.** (1)	**50.** (1)
51. (1)	**52.** (1)	**53.** (4)	**54.** (1)	**55.** (3)	**56.** (4)	**57.** (2)	**58.** (3)	**59.** (3)	**60.** (2)
61. (3)	**62.** (2)	**63.** (4)	**64.** (3)	**65.** (4)	**66.** (2)	**67.** (1)	**68.** (3)	**69.** (2)	**70.** (3)
71. (1)	**72.** (1)	**73.** (2)	**74.** (4)	**75.** (2)	**76.** (2)	**77.** (2)	**78.** (2)	**79.** (1)	**80.** (4)
81. (2)	**82.** (4)	**83.** (3)	**84.** (3)	**85.** (4)	**86.** (3)	**87.** (3)	**88.** (2)	**89.** (1)	**90.** (4)
91. (4)	**92.** (3)	**93.** (4)	**94.** (2)	**95.** (1)	**96.** (2)	**97.** (1)	**98.** (3)	**99.** (2)	**100.** (1)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (4) As 'Product' is related to 'Multiplication', similarly 'Sum' is related to 'Addition'.

2. (3) F H K O Q T
–2 –2 –2 –2 –2 –2
D F I M O R

3. (3) 10001 : 10101 :: 101 : **201**
+100 +100

4. (2) Except Shirt, all others are meant for lower part of the body. Shirt is garment of upper part of the body.

5. (2) E $\xrightarrow{+3}$ H $\xrightarrow{+3}$ K
Z $\xrightarrow{+2}$ B $\xrightarrow{+2}$ D

L $\xrightarrow{+3}$ O $\xrightarrow{+3}$ R
S $\xrightarrow{+3}$ V $\xrightarrow{+3}$ Y

6. (3) Except '15', all other options are the multiplies of 10.

7. (3) The number of letters in increasing by one in the next term.

8. (3) KlMnO qRsTu WxYzA cDeFg **IjKlM**
+2 +2 +2 +2

9. (1) 0 3 8 (15) 24 35
+3 +5 +7 +9 +11

10. (1) Total number of days from 12th April to 2nd October
= 18 + 31 + 30 + 31 + 31 + 30 + 2
= 173
= 173 ÷ 7
= 24 weeks + 5 odd days
Number of odd days = 5
∴ Required day = Wednesday + 5
= Monday

11. (4) Weight cannot be form from the given weight (kg) = 200

12. (4) There is no 'A' letter in the given word.
∴ The word 'TEARS' cannot be formed.

13. (1) F R I S K E D
+2 +2 +2 +2 +2 +2 +2
H T K U M G F

S U N
+2 +2 +2
U W P

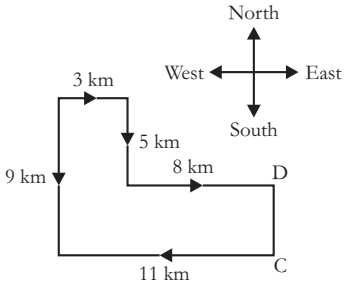
14. (4) Changing signs according to question,

$80 + 2 \div 25 + 5 - 10 = ?$
$80 \times 2 - 25 \times 5 + 10 = ?$
$160 - 125 + 10 = ?$
$170 - 125 = ?$
$45 = ?$

15. (1) As,
$45 \,\%\, 11 \Rightarrow (4 + 5) - (1 + 1) = 7$
$59 \,\%\, 34 \Rightarrow (5 + 9) - (3 + 4) = 7$
Similarly,
$55 \,\%\, 4 \Rightarrow (5 + 5) - 4 = 6$

16. (3) $87 + 15 = 105$
$45 + 44 = 89$
$25 + 52 = 77 = ?$

17. (3)



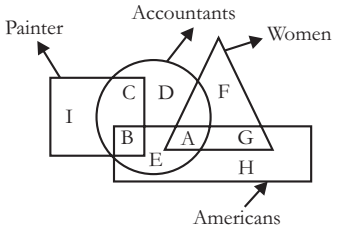
$\therefore$ Required distance $= 9 - 5$
$= 4$ km North

18. (1) Only argument I holds strong. It is true that few vehicles ply after midnight. It is not proper to deny safety and security to even a single person.

$\therefore$ Argument II does not strong.

19. (4) Cube given against option (4) cannot be formed.

20. (2)



Americans who are not Accountants can be represented by such letters which are present in the rectangle but outside the circle. Such letters are G and H.

21. (1)

22. (4)

23. (1)

24. (4)

25. (1) S → 68, 79, **95**
E → **23**
L → **24**
F → **41**

For given word SELF, group of letters can be represented by the numbers → 95, 23, 24, 41

PART-II
(GENERAL AWARENESS)

26. (4) **Production Possibility Set:** It is a curve depicting all maximum output possibilities for two goods, given a set of inputs consisting of resources and other factors. It assumes that all inputs are used efficiently.

27. (2) In economics, if at a price, market supply is greater than market demand, we say that there is excess demand in the market at that price.

28. (3) **All India Anna Dravida Munnetra Kazhagam (AIADMK):** It was founded by M.G. Ramachandran on 17 October, 1972 as a breakaway faction of the Dravida Munnetra Kazhagam (DMK).

29. (3) **Right to Equality:** It has been guaranteed by the Indian Constitution in Articles 14–18. Article 15 (2) states that no citizens shall on any of these grounds be deprived of access to shops, public restaurants, hotels and places of public entertainment or the use of wells, tanks, bathing ghats, roads and places of public resort maintained wholly or partly out of state funds or dedicated to the use of general public.

30. (1) **Salt Satyagraha:** It was a mass civil disobedience movement initiated by Mahatma Gandhi against the salt tax imposed by the British government in India. He led a large group of people from Sabarmati Ashram on 12th March 1930 till Dandi, a coastal village in Gujarat, to break the salt law by producing salt from sea water. On the morning of 6th April 1930. Gandhiji broke the salt law by making salt.

31. (2) The Tomars founded the city of Delhi in 736 A.D. They were the feudatory chiefs of the Pratiharas but later on they established their own kingdom at Delhi. In 1043, Mahipala Tomar captured Thaneswar, Hansi and Nagarkot. In the middle of the 12th century they came under the Chauhans of Ajmer who captured Delhi from them.

32. (3)

Top Ten Countries (Areawise)
• Russia
• Canada
• China
• USA
• Brazil
• Australia
• India
• Argentina
• Kazaksthan
• Algeria

33. (3) Earthquakes occur when tension is released from inside the crust. The point inside the crust where the pressure is released is called the focus. The point on the Earth's surface above the focus is called the epicentre.

34. (2) The male accessory ducts are vasa efferentia, epididymis, vas deferens and rete testis. They play an important role in the transport and temporary storage of sperms.

35. (1) Intercalary meristem lies between the region of permanent tissues and is considered as a part of primary meristem which has become detached due to formation of intermediate permanent tissues.

36. (4) There are around 29,000 described species in the phylum Platyhelminthes. Platyhelminths, or flat-worms, include both free-living and parasitic species.

37. (3) Initial Velocity is the velocity at which motion begins. It is denoted by *u*.

38. (3) Adult men and women have different vocal folds sizes; reflecting the male-female differences in larynx size. The male vocal folds are between 17 mm to 25 mm in length. The female vocal folds are between 12.5 mm to 17.5 mm in length.

39. (2) **Hypertext Markup Language (HTML):** It is the standard markup language for creating web pages and web applications.

40. (4) Tartaric acid is a white crystalline dicarboxylic acid found in many plants, particularly tamarinds and grapes.

41. (2) **Artificial Silk:** Rayon is a manufactured regenerated cellulose fiber.

42. (1) Due to Global warming, the global average surface temperature rose 0.6 to 0.9 degrees Celsius (1.1 to 1.6° F) between 1906 and 2005, and the rate of temperature increase has nearly doubled in the last 50 years.

43. (3) **Pradhan Mantri Jan-Dhan Yojana:** Launched on 28 August, 2014. The government's financial inclusion scheme offers easy access to banking services. It seeks to ensure access to financial services – banking/savings and deposit accounts, remittance, credit, insurance and pension – in an affordable manner.

44. (3) Uranus was officially discovered by Sir William Herschel in 1781. It is often referred to as an "ice giant" planet. The moons of Uranus include Oberon, Titania and Miranda.

45. (4) **Rugby World Cup 2015:** The eighth Rugby World Cup hosted by England from 18 September to 31 October. New Zealand won the cup defeating Australia.

46. (3) Nalanda was one of the most publicly acknowledged Mahaviharas of ancient India located in ancient Magadha Kingdom (modern Bihar). It remained a learning centre from 7th century BCE through c. 1200 CE.

47. (2) The Nobel Prize in Chemistry 2016 is awarded to Jean-Pierre Sauvage, Sir J. Fraser Stoddart and Bernard L. Feringa for their design and production of molecular machines.

48. (3) Missile Gap is a 2006 science fiction novel by Charles Stross.

• Bird Box is a 2014 post-apocalyptic novel of Josh Malerman.

• The City & the City is a novel by British author China Mieville.

49. (1) Mauritius was India's largest overseas investment destination in 2015–16. Mauritius, Singapore.

50. (1) The Line of Actual Control (LAC) is the effective border between India and the People's Republic of China. It traverses 4,057 km along the Indian states of Jammu and Kashmir, Uttarakhand, Himachal Pradesh, Sikkim and Arunachal Pradesh.

PART-III (QUANTITATIVE APTITUDE)

51. (1) Factors of $64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$

Factors of $56 = 2 \times 2 \times 2 \times 7$

$\therefore$ L.C.M. of 64 and $56 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 7$

$= 448$

52. (1) (A + B)'s 1 day work $= \frac{1}{6.75}$

A's 1 day work $= \frac{1}{9}$

$\therefore$ B's 1 day work $= \frac{1}{6.75} - \frac{1}{9}$

$= \frac{4}{27} - \frac{1}{9}$

$= \frac{4-3}{27} = \frac{1}{27}$

$\therefore$ B will complete the work = 27 days

53. (4) Radius of sphere = r cm

Surface area of sphere = $4\pi r^2$

$154 = 4 \times \frac{22}{7} \times r^2$

$r^2 = \frac{154 \times 7}{4 \times 22}$

$r = \frac{7}{2} = 3.5$ cm

$\therefore$ Diameter of sphere = $2r$

$= 2 \times 3.5$

$= 7$ cm

54. (1) Cost price of 1 shirt and 3 pairs of trousers = 100 + 900 = ₹ 1,000

After discount cost price

$= 100 \times \frac{90}{100} + 900 \times \frac{80}{100}$

$= 90 + 720$

$=$ ₹ 180

Discount = 1000 – 810

$\therefore$ Discount percentage

$= \frac{190}{1000} \times 100 = 19\%$

55. (3) $A = \frac{5}{7}B$ ... (i)

$C = \frac{10}{7}B$ ... (ii)

Dividing equation (ii) by (i),

$\frac{C}{A} = \frac{\frac{10}{7}B}{\frac{5}{7}B}$

$\frac{C}{A} = \frac{10B}{5B}$

$\frac{C}{A} = \frac{2}{1}$

$\therefore$ C : A = 2 : 1

56. (4) Four consecutive odd numbers = x, $(x + 2)$, $(x + 4)$ and $(x + 6)$

According to question,

$\frac{x + (x+2) + (x+4) + (x+6)}{4} = 64$

$x + (x+2) + (x+4) + (x+6) = 64 \times 4$

$4x + 12 = 256$

$4x = 256 - 12$

$4x = 244$

$x = \frac{244}{4} = 61$

$\therefore$ Largest number $= x + 6$

$= 61 + 6 = 67$

57. (2) Selling price = ₹ 960

Gain = 20%

Cost price $= 960 \times \frac{100}{120}$

$=$ ₹ 800

New selling price = ₹ 1,120

$\therefore$ Required profit percentage

$= \frac{1120 - 800}{800} \times 100$

$= \frac{320}{800} \times 100 = 40\%$

58. (3) Total wealth costs = ₹ x

Wealth of charity $= x \times \frac{25}{100} = \frac{x}{4}$

Wealth to family $= x \times \frac{75}{100} = \frac{3x}{4}$

$\therefore$ Required percentage

$$= \frac{\frac{3x}{4}}{\frac{x}{4}} \times 100 = 300\%$$

59. (3) Actual distance $= x$ km

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

According to question,

$$\frac{x+3}{15} = \frac{x}{9}$$
$$9(x+3) = 15x$$
$$9x + 27 = 15x$$
$$6x = 27$$
$$x = \frac{27}{6} = 4.5 \text{ km}$$

60. (2) By formula,

$$A = P\left(1+\frac{r_1}{100}\right)\left(1+\frac{r_2}{100}\right)$$
$$9660 = x\left(1+\frac{5}{100}\right)\left(1+\frac{15}{100}\right)$$
$$9660 = x\left(\frac{105}{100}\right)\left(\frac{115}{100}\right)$$
$$x = \frac{9660 \times 100 \times 100}{105 \times 115}$$
$$x = ₹\ 8{,}000$$

61. (3) $\frac{\left[4\left(\frac{2x}{5}-\frac{3}{2}\right)\right]}{3} + \frac{7}{5} = \frac{37}{5}$

$$\frac{4(4x-15)}{3\times 10} + \frac{7}{5} = \frac{37}{5}$$
$$\frac{(16x-60)}{30} + \frac{7}{5} = \frac{37}{5}$$
$$\frac{16x-60+42}{30} = \frac{37}{5}$$
$$16x - 60 + 42 = 222$$
$$16x = 240$$
$$x = \frac{240}{16}$$
$$= 15$$

62. (2) Given, $(a-b) = 4$, $ab = -3$

$$(a-b)^2 = a^2 + b^2 - 2ab$$
$$(4)^2 = a^2 + b^2 - 2(-3)$$
$$16 = a^2 + b^2 + 6$$
$\Rightarrow$ $a^2 + b^2 = 10$

$$a^3 - b^3 = (a-b)(a^2 + b^2 + ab)$$
$$a^3 - b^3 = 4[10 + (-3)]$$
$$a^3 - b^3 = 4(10-3)$$
$$a^3 - b^3 = 4 \times 7 = 28$$

63. (4) Fraction $= \frac{x}{y}$,

According to question,

$$2 \times \frac{x}{y} + 3 \times \frac{y}{x} = \frac{29}{3}$$

Let, $\frac{x}{y} = z$

$\therefore$ $2z = \frac{3}{z} = \frac{29}{3}$

$$2z^2 + 3 = \frac{29z}{3}$$
$$6z^2 + 9 = 29z$$
$$6z^2 - 29z + 9 = 0$$
$$6z^2 - 2z - 27z + 9 = 0$$
$$2z(3z-1) - 9(3z-1) = 0$$
$$(2z-9)(3z-1) = 0$$
$$z = \frac{9}{2}, \frac{1}{3}$$

$\therefore$ $\frac{x}{y} = z = \frac{9}{2}$

64. (3) First term $= a$ and common difference $= d$ of an A.P.

$A_7 = -15$ and $A_{12} = 5$ (Given)

Then, $-15 = a + (7-1)d$

$[\because A = a + (n-1)d]$

$$-15 = a + 6d \quad \text{... (i)}$$
$$-5 = a + (12-1)d$$
$$5 = a + 11d \quad \text{... (ii)}$$

Subtracting equation (ii) from equation (i),

$$20 = 5d$$
$$d = \frac{20}{5} = 4$$

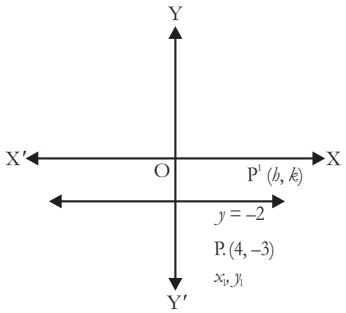
Putting $d = 4$ in equation (i),

$$-15 = a + 6d$$
$$-15 = a + 6 \times 4$$
$$-15 = a + 24$$
$$a = -24 - 15 = -39$$

$\therefore$ $A_{16} = a + (16-1)d$

$$A_{16} = -39 + 15 \times 4$$
$$A_{16} = -39 + 60$$
$$A_{16} = 21$$

65. (4)



$\therefore$ $k - y_1 = y(y_1 - y)$

or, $\frac{k+3}{1} = \frac{-2(-3+2)}{1}$

or, $k + 3 = 2$

or, $k = -1$

Reflection $= (4, -1)$

66. (2) Distance between two points

$$= \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$$

According to question,

$$13 = \sqrt{(k-2)^2 + (-5-7)^2}$$
$$13^2 = (k-2)^2 + (-12)^2$$
$$169 - 144 = (k-2)^2$$
$$25 = (k-2)^2$$
$$k - 2 = 5$$
$\Rightarrow$ $k = 5 + 2 = 7$

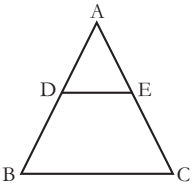
67. (1) $5x + 3y = 6$

$$3y = -5x + 6$$
$$y = -\frac{5}{3}x + 6$$
$$m_1 = -\frac{5}{3}$$

$\therefore$ $m_2 = \frac{3}{5}$ $(\because m_1 m_2 = -1)$

By equation, $y = mx + c$,

68. (3)



AD : DB $= 2 : 5$

AD $= 2k$, DB $= 5k$

AB $= 2k + 5k = 7k$

DE $\parallel$ BC,

$\therefore$ $\angle ADE = \angle ABC$

$\angle AED = \angle ACB$

By AA-similarity,

$\Delta ADE \sim \Delta ABC$

$$\frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta ADE} = \frac{(AB)^2}{(AD)^2}$$
$$\frac{\text{Area of } \Delta ABC}{8} = \frac{(7k)^2}{(2k)^2}$$

$\therefore$ Area of ΔABC

$$= \frac{49 \times 8}{4}$$
$$= 98 \text{ metre}^2$$

69. (2) $\sin 30° - \sqrt{2} \cos 30°$

$$= \frac{1}{2} - \sqrt{2} \times \frac{\sqrt{3}}{2}$$

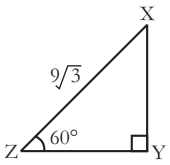
$$= \frac{1}{2} - \frac{\sqrt{3}}{\sqrt{2}} = \frac{\sqrt{2} - 2\sqrt{3}}{2\sqrt{3}}$$

$$= \frac{\sqrt{2}(1 - \sqrt{6})}{2\sqrt{2}}$$

$$= \frac{1 - \sqrt{6}}{2}$$

70. (3) In ΔXYZ,

$$\cos 60° = \frac{ZY}{ZX}$$



or, $\frac{1}{2} = \frac{ZY}{9\sqrt{3}}$

$$ZY = \frac{9\sqrt{3}}{2} \text{ cm}$$

71. (1) $\sec\theta = \frac{13}{12}$

or, $\cos\theta = \frac{12}{13}$

$\therefore \sin\theta = \sqrt{1 - \cos^2\theta}$

$$= \sqrt{1 - \left(\frac{12}{13}\right)^2}$$

$$= \sqrt{\frac{169 - 144}{169}}$$

$$= \sqrt{\frac{25}{169}} = \frac{5}{13}$$

72. (1) A → 300 + 330 = 630
B → 500 + 525 = 1025
C → 100 + 120 = 220
D → 50 + 100 = **150**

73. (2) Required percentage

$$= \frac{525 - 500}{500} \times 100$$

$$= \frac{25}{500} \times 100 = 5\%$$

74. (4) Total revenue in 2015
= 300 + 500 + 100 + 50
= 950 lakh
Total revenue in 2016
= 330 + 525 + 120 + 100
= 1075 lakh
∴ Required difference
= 1075 – 950
= 125 lakh
= 1.25 crore

75. (2) A → 300 + 330 = 630 lakh
B → 500 + 525 = 1025 lakh
= 10.25 crore
C → 100 + 120 = 320 lakh
D → 50 + 100 = 150 lakh
∴ Required profit = 10.25 – 10
= 0.25 crore
= 25 lakh

PART-IV (ENGLISH LANGUAGE)

76. (2) In the given sentence, part (2) has an error. To correct the sentence use 'beside' in place of 'close'.

77. (2) In the given sentence, part (2) has an error. To correct the sentence use 'past' in place of 'side'.

78. (2) Appropriate word for the blank to be filled → nothing

Sentence → She did nothing but weep.

79. (1) **Wistfully (Adverb):** with a feeling of regretful longing.

80. (4) **Pillage/Desecrate (Verb):** violate; profane; pollute.

Sentence → The abbey was pillaged.

81. (2) **Cluster/Assemblage (Noun):** a collection of things; a loose cluster of diverse groups.

82. (4) Opposite of Rampart is

Ditch (Noun): trench; channel; gutter.

Sentence → The car plunged into a ditch.

83. (3) Opposite of Epidemic is:

Limited (Adjective): restricted; finite.

Sentence → A limited number of jobs are available.

84. (3) Recall of factual information at one's command.

Sentence → The genius child has all the times tables at his fingertips.

85. (4) To not know about something.

Sentence → He does not have a clue as regards his whereabouts.

86. (3) For improvement of sentence use 'has starting' in place of 'have to start'.

87. (3) For improvement of sentence use 'are being' in place of 'being'.

88. (2) Best substitute of the sentence is

Tutelage (Noun): The state of being protected or controlled by another person or organisation.

Sentence → Under his tutelage she regained her interest in arts.

89. (1) Best substitute of the sentence is

Sanguine (Adjective): Cheerful and confident that things will happen in the way you want them to, optimistic and hopeful.

Sentence → They have begun to take a more sanguine view.

90. (4) Correctly spelt word → Actuation

91. (4) Correctly spelt word → Motheaten

92. (3) Logical order of the sentences to form a coherent paragraph → ZXY

93. (4) Logical order of the sentences to form a coherent paragraph → ZXY

94. (2) Passive/Active Voice

• By whom were you taught to ride?

It is active formation of an interrogative sentence in simple past tense.

95. (1) Indirect/Direct speech

• Sheetal asked me how I had solved that problem.

It is direct speech of an interrogative sentence.

96. (2) Best option for blank → from

97. (1) Best option for blank → and (conjunction)

98. (3) Best option for blank → Instead

99. (2) Best option for blank → sometimes

100. (1) Best option for blank → whose (determiner)

❑❑❑

7

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 19 August, 2017 (III)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Night : Stars : : Day : ?
(1) Sun (2) Blue
(3) Work (4) Planet

2. BEH : KNQ : : FIL : ?
(1) ONM (2) NLJ
(3) ORU (4) OMK

3. 6 : – 3 : : – 18 :?
(1) 3 (2) 9
(3) – 9 (4) – 6

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Cyan (2) Crimson
(3) Indigo (4) Sky blue

5. (1) JPV (2) UIO
(3) KQW (4) LRX

6. (1) 8 (2) 27
(3) 100 (4) 125

Directions (7–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

7. employ, oyster, errors, ornate, tennis,?
(1) neptune (2) nature
(3) terminate (4) isomer

8. XXXXXO, XXXXOX, XXXOXX, XXOXXX, XOXXXX,?
(1) OXXXXX (2) OXXXXO
(3) OXXXOX (4) XXXXXX

9. $-\frac{7}{4}, -1, -0.25, ?, \frac{5}{4}, 2$
(1) 0.5 (2) 0.75
(3) 0.25 (4) 1

10. Dhruv's birthday is on Sunday 28th May. On what day of the week will be Sahil's birthday in the same year if Sahil was born on 19th October?
(1) Saturday (2) Wednesday
(3) Thursday (4) Sunday

11. The weights of 4 boxes are 30, 20, 60 and 70 kg. Which of the following cannot be the total weight, in kilogram, of any combination of these boxes and in a combination a box can be used only once?
(1) 180 (2) 170
(3) 120 (4) 150

12. From the given words, select the word which cannot be formed using the letters of the given word.
PROXIMAL
(1) MOLAR (2) AXIOM
(3) REALM (4) APRIL

13. If PONDERS is coded as ONMCDQR, then how will MAT be coded as?
(1) LZS (2) OLI
(3) AEG (4) LDZ

14. In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
$80 \times 16 \div 4 + 2 - 8 = ?$
(1) 11 (2) 64
(3) 30 (4) 5

15. If 35%31 = 12, 92 % 30 = 14 then what is the value of 15% 24 =?
(1) 12 (2) 25
(3) 33 (4) 28

16. Select the missing number from the given responses.

111	314	205
34	39	102
?	275	103

(1) 172 (2) 75
(3) 77 (4) 170

17. X and Y both start from a same point. X walks 17 m West, then turns to his right and walks 13 m. At the same time, Y walks 9 m North, then turns East and walks 7 m, then turns to his left and walks 4 m. Where is Y now with respect to the position of X?
(1) 24 m West (2) 10 m East
(3) 10 m West (4) 24 m East

18. In the question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument?

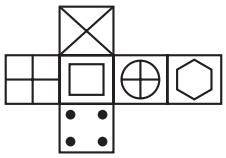
Statements:
Should songs be eliminated from Indian movies?

Arguments:
I. Yes, Hollywood movies are hit despite having no songs.
II. No, songs help increase length of the movie.
(1) If only argument I is strong
(2) If only argument II is strong
(3) If both arguments I and II are strong

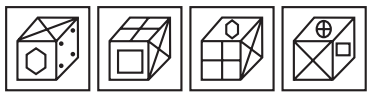
(4) If neither argument I nor II is strong

19. Which of the following cube in the answer figures cannot be made based on the unfolded cube in the question figure?

Question Figure

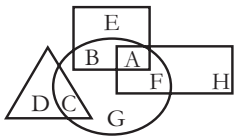


Answer Figures



(1) (2) (3) (4)

20. In the following figure, square represents Pharmacists, triangle represent Singers, circle represents Surgeons and rectangle represents Mothers. Which set of letters represents Surgeons who are either Mothers or Singers?

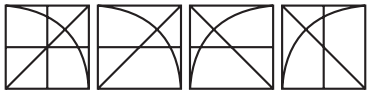


(1) E, D, G (2) A, F, C
(3) A, D, C (4) H, B, C

21. Which answer figure will complete the pattern in the question figure?

Question Figure

Answer Figures

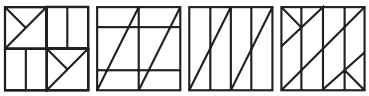


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

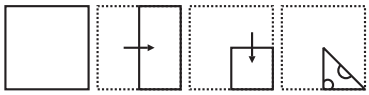
Answer Figures



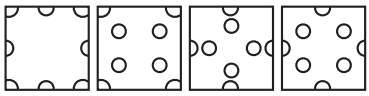
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figure



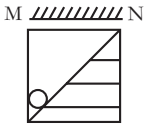
Answer Figures



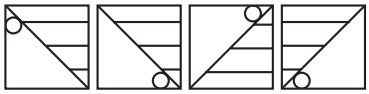
(1) (2) (3) (4)

24. If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'K' can be represented by 42, 34, etc. and 'Z' can be represented by 76, 88 etc. Similarly, you have to identify the set for the word 'RIDE'.

Matrix-I

	0	1	2	3	4
0	G	K	H	A	M
1	D	C	F	E	G
2	J	G	L	D	J
3	I	H	A	E	K
4	B	C	K	C	G

Matrix-II

	5	6	7	8	9
5	U	O	Y	V	O
6	T	V	Q	O	T
7	V	Z	P	S	W
8	O	Y	P	Z	R
9	O	V	V	V	Z

(1) 30, 23, 85, 66
(2) 89, 30, 10, 13
(3) 10, 24, 68, 78
(4) 10, 11, 88, 86

PART-II
(GENERAL AWARENESS)

26. A ..... deficit is financed by net capital flows from the rest of the world, thus by a capital account surplus.
(1) Current Account
(2) Savings Account
(3) Capital Account
(4) Asset Account

27. ..... is defined as the output per unit of variable input.
(1) Marginal product
(2) Production function
(3) Total product
(4) Average product

28. "Taxes on lands and buildings" is listed in the ..... list given in the Seventh Schedule in the Constitution of India.

(1) Union (2) State
(3) Global (4) Concurrent

29. There are total ..... parliamentary seats (Rajya Sabha constituency) in Maharashtra.
(1) 11 (2) 19
(3) 10 (4) 1

30. Akbar was ..... years old when he became emperor.
(1) 16 (2) 19
(3) 13 (4) 10

31. Sultan Mahmud was a ruler of ..... .
(1) Persia (2) Ghazni
(3) Lahore (4) Arab

32. As the river enters the plain it twists and turns forming large bends known as ..... .
(1) crooks (2) flections
(3) rounds (4) meanders

33. The method of soil conservation in which stones, grass, soil are used to build barriers along contours and trenches are made in front of the barriers to collect water is called:
(1) Mulching
(2) Contour barriers
(3) Rock dam
(4) Terrace farming

34. In male reproductive system, the testes are situated outside the abdominal cavity within a pouch called:
(1) Glands
(2) Scrotum
(3) Testicular Lobules
(4) Seminiferous Tubules

35. Which of the following is not among the three main classes of Algae?
(1) Chlorophyceae
(2) Rhodophyceae
(3) Phaeophyceae
(4) Gymnosperms

36. Sycon (Scypha), Spongilla (Fresh water sponge) and Euspongia (Both sponge) are examples of which Phylum?
(1) Coelenterata
(2) Platyhelminthes
(3) Ctenophora
(4) Porifera

37. If the force applied on the object is in the direction opposite to the direction of motion, the speed of the object ..... .
(1) increases (2) stops
(3) decreases (4) no effect

38. The SI unit of acceleration is ..... .
(1) meters per seconds squared
(2) meters per second
(3) seconds per meter
(4) seconds per meter squared

39. In Microsoft Excel, the ..... ( ) function returns the smallest value among the values passed as arguments.
(1) LEAST (2) LESS
(3) MIN (4) LOW

40. Fire extinguishers emit which gas?
(1) Carbon monoxide
(2) Chlorine
(3) Carbon dioxide
(4) Nitrogen

41. What is formed when Magnesium is burnt?
(1) Baking Soda
(2) Calcium Carbonate
(3) Ash
(4) Vinegar

42. The salt concentration (measured as salinity in parts per thousand), is less than ..... % in inland waters.
(1) 5 (2) 20
(3) 50 (4) 75

43. ..... scheme launched by the Central Government aims to improve rural livelihoods and promote rural development and strengthen the Panchayati Raj across the country.
(1) Pradhan Mantri Fasal Bima Yojana
(2) Gram Uday Se Bharat Uday Abhiyan
(3) Stand Up India Scheme
(4) National RU URBAN Mission

44. Who discovered Photon?
(1) George Crum
(2) Albert Einstein
(3) Henry Cavendish
(4) Humphry Davy

45. Who is the winner of 2016–17 Premier League (Football):
(1) Leicester City
(2) Manchester City
(3) Chelsea
(4) Manchester United

46. Gol Gumbaz was designed by?
(1) Ustad Ahmad of Lahouri
(2) George Wittet
(3) Henry Irwin
(4) Yaqut of Dabul

47. Which of the following was the winner of the Grammy Awards 2016 "Country Song of the Year"?
(1) Chances Are
(2) Girl Crush
(3) Hold My Hand
(4) Traveller

48. Which of the statements given below are not correct?
1. The author of the novel 'Bird Box' is Victor LaValle.
2. The author of the novel 'The Devil in Silver' is Josh Malerman.
3. The author of the novel 'Fellside' is Victor LaValle.
(1) A and B (2) B and C
(3) A and C (4) A, B and C

49. In April 2017, to address growing unemployment, which country has abolished the 457 Visa Programme used by thousands of temporary foreign workers, a majority of them Indians?
(1) USA (2) Canada
(3) Australia (4) UK

50. SAARC Agriculture Centre (SAC) is based in which city?
(1) Islamabad (2) Dhaka
(3) Colombo (4) Kathmandu

PART-III
(QUANTITATIVE APTITUDE)

51. What least number must be subtracted from 3401, so that the sum is completely divisible by 11?
(1) 3 (2) 1
(3) 2 (4) 0

52. M is thrice as good as workman as N and together they finish a piece of work in 30 days. In how many days will M alone finish the work?

(1) 50 days (2) 40 days
(3) 60 days (4) 45 days

53. What is the area (in sq cm) of a regular hexagon of side 14 cm?
(1) $147\sqrt{3}$ cm (2) $441\sqrt{3}$ cm
(3) $196\sqrt{3}$ cm (4) $294\sqrt{3}$ cm

54. If 2 T-shirts are offered free on purchase of 5 T-shirts, what is the effective discount (in %) on each T-shirt?
(1) 40% (2) 20%
(3) 30% (4) 50%

55. The ratio of present ages of R and S is 11 : 17. Before 11 years the ratio of their ages was 11:20. What is R's present age (in years)?
(1) 51 years (2) 33 years
(3) 22 years (4) 40 years

56. The average marks of 40 students in an examination was 25. It was later found that the marks of one student had been wrongly entered as 73 instead of 37. What is the value of correct average?
(1) 24.3 (2) 24.1
(3) 24.5 (4) 24.7

57. A wholesaler sells a jacket to a retailer at a profit of 5% and the retailer sells it to a customer at a profit of 10%. If the customer pays ₹ 4,158/-, what had it cost (in ₹) to the wholesaler?
(1) ₹ 3,500/- (2) ₹ 3,400/-
(3) ₹ 3,300/- (4) ₹ 3,600/-

58. A number is increased by 84, it becomes 107% of itself, What is the number?
(1) 600 (2) 900
(3) 1500 (4) 1200

59. If a boat goes a certain distance at 30 km/hr and comes back the same distance at 60 km/hr. What is the average speed (in km/h) for the total journey?
(1) 45 km/h (2) 50 km/h
(3) 40 km/h (4) 35 km/h

60. An amount fetched a total simple interest of ₹ 3,200/- at the rate of 6.25% per year in 4 years. What is the amount (in ₹)?
(1) ₹ 13,800/- (2) ₹ 11,800/-
(3) ₹ 12,800/- (4) ₹ 14,800/-

61. If $\frac{x}{2} - \left[\frac{4\left(\frac{15}{2} - \frac{x}{3}\right)}{3}\right] = -\frac{x}{18}$, then what is the value of x?
(1) – 10 (2) $\frac{9}{8}$
(3) 10 (4) $-\frac{9}{8}$

62. If $a^3 + b^3 = 152$ and $a + b = 8$, then what is the value of ab?
(1) 2 (2) 11
(3) – 10 (4) 15

63. A fraction is greater than its reciprocal by $\frac{9}{20}$. What is the fraction?
(1) $\frac{5}{4}$ (2) $\frac{4}{5}$
(3) $\frac{3}{4}$ (4) $\frac{4}{3}$

64. What is the sum of the first 9 terms of an arithmetic progression if the first term is 7 and last term is 55?
(1) 219 (2) 137
(3) 231 (4) 279

65. What is the reflection of the point (5, –2) in the line $x = –1$?
(1) (–7, –2) (2) (5, 0)
(3) (7, –2) (4) (5, 2)

66. Point A divides segment BC in the ratio 4 : 1. Co-ordinates of B are (6, 1) and C are $\left(\frac{7}{2}, 6\right)$. What are the co-ordinates of point A?
(1) (4, 3) (2) (4, 5)
(3) (2, 5) (4) (3, 5)

67. What is the slope of the line parallel to the line passing through the points (5, –1) and (4, –4)?
(1) –3 (2) $-\frac{1}{3}$
(3) 3 (4) $\frac{1}{3}$

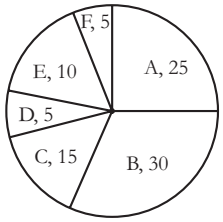
68. ΔXYZ is similar to ΔPQR. If ratio of Perimeter of ΔXYZ and Perimeter of ΔPQR is 16 : 9 and PQ = 3.6 cm, then what is the length (in cm) of XY?
(1) 4.8 cm (2) 3.2 cm
(3) 6.4 cm (4) 8.6 cm

69. What is the value of $\left(\frac{1}{2}\right)$ sec 30° + $\sqrt{2}$ tan 60°?
(1) $\frac{(1 + 3\sqrt{2})}{\sqrt{3}}$ (2) $\frac{\sqrt{3} + 2}{\sqrt{3}}$
(3) $\sqrt{3} + 2$ (4) $\frac{(\sqrt{3} + 2)}{2}$

70. ΔDEF is right angled at E. If $m\angle D = 45°$, then what is the value of cosec F × cot D?
(1) $\frac{1}{\sqrt{2}}$ (2) 2
(3) $\frac{1}{2}$ (4) $\sqrt{2}$

71. If $\sec\theta = \frac{25}{24}$, then what is the value of $\sin\theta$?
(1) $\frac{24}{25}$ (2) $\frac{7}{25}$
(3) $\frac{24}{7}$ (4) $\frac{25}{7}$

Directions (72–75): Students from different countries (A, B, C, D, E, F) participated in a certain seminar. The pie chart shows how many students came from each of the six participating countries. Study the diagram and answer the following questions.



72. The biggest contingent of students was from which country?
(1) A (2) C
(3) B (4) D

73. What is the angular measure (in degrees) of the sector representing Country A?
(1) 100° (2) 25°
(3) 50° (4) 120°

74. By what count (in %) students from Country B at the seminar were more than the students from Country E?
(1) 40% (2) 200%
(3) 20% (4) 18%

75. If the cost of total spending on transport for the seminar was ₹ 9 lakh and the cost of hosting the students was ₹ 15,000 per student then what was the ratio of hosting cost of all the students to that of spending on transport?
(1) 2 : 5 (2) 3 : 2
(3) 1 : 1 (4) 1 : 2

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. He was such a (1)/ wonderful person (2)/ into so many ways. (3)/ No error (4)

77. The magician placed the ball (1)/ underneath of his hat and (2)/ made a mystic sign above it. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. Our nation's ..... into another country's war could pull us into the crisis.
(1) intervention (2) intention
(3) perfection (4) invention

79. As a fitness ....., Deepti is always preaching to her friends about the importance of working out.
(1) enthusiasm (2) enthusiast
(3) enthusiastic (4) enthusiastically

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Phonetic
(1) Mute (2) Reticent
(3) Silent (4) Spoken

81. To Astound
(1) To Bewilder (2) To Tranquil
(3) To Placid (4) To Serene

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Disdain
(1) Antipathy (2) Admiration
(3) Derision (4) Scorn

83. Canonical
(1) Approved (2) Official
(3) Sanctioned (4) Unorthodox

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. It goes without saying
(1) To silently bear the injustice
(2) Something which is implied to be obvious
(3) There is no point in doing something after you are told to do it
(4) Break long relationship with someone

85. To let someone off
(1) To let someone fall
(2) To leave someone in his present state
(3) To release someone from blame
(4) To refuse to answer

Directions (86–87): Improve the **bold** part of the sentence.

86. May be they **has had** a fight.
(1) were had
(2) was having
(3) were having
(4) No improvement

87. We wouldn't want them to think we **doing** anything immoral.
(1) was doing
(2) were doing
(3) done
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

88. Excessively lengthy speech
(1) Concision (2) Verbiage
(3) Curt (4) Succinct

89. An ornamented staff carried by rulers on ceremonial occasions as a symbol of sovereignty
(1) Spectacle (2) Receptacle
(3) Sceptre (4) Zephyr

Directions (90–91): In the following questions, four words are given out of which one word is correctly spelt. Select the incorrectly spelt word.

90. (1) Contusion (2) Contution
(3) Cuntusion (4) Cuntution

91. (1) Scemitars (2) Scimitars
(3) Scimetars (4) Scemetars

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. Three times this was
X. only be compared to the deepest notes of thunder
Y. shook with the noise, that can
Z. repeated, and each time the earth
(1) ZXY (2) YZX
(3) ZYX (4) YXZ

93. The causes and their
X. in the same series
Y. one order, they stand
Z. effects belong to the
(1) ZXY (2) YZX
(3) YXZ (4) ZYX

94. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
Sunita will bake two dozen cupcakes for the bake sale.
(1) For the bake sale, two dozen cookies will be baked by Sunita
(2) For the bake sale, two dozen cookies is baked by Sunita
(3) Baking of two dozen cookies by Sunita will be done for the bake sale

(4) Baking of two dozen cookies by Sunita is done for the bake sale

95. In the following question, a sentence has been given in Direct/ Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
My mother said to my father, "I am very busy now."
(1) My mother told my father that I am very busy now
(2) My mother told my father that she is very busy then
(3) My mother told my father that she was very busy then
(4) My mother told my father that I was very busy now

Directions (96–100): In the following passage, some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

This was enough **...(99)...** the book store-owner-turned librarian Husain to assess its valuable contents. "The preface of the book read: 'painters **...(97)...** technical knowledge to paint, but lack to understand nature, **...(98)...** they fail to create a masterpiece, "point out Husain, adding, "All I **...(99)...** in my life is about books and from books. The grand library **...(100)...** the palace is a cache of knowledge."

96. (1) for (2) of
(3) to (4) from

97. (1) has (2) has had
(3) have (4) to have

98. (1) if (2) that
(3) hence (4) this

99. (1) learning (2) learned
(3) to learn (4) learns

100. (1) from (2) at
(3) to (4) off

Short Answers

1. (1)	**2.** (3)	**3.** (2)	**4.** (2)	**5.** (2)	**6.** (3)	**7.** (4)	**8.** (1)	**9.** (1)	**10.** (3)
11. (2)	**12.** (3)	**13.** (1)	**14.** (4)	**15.** (1)	**16.** (3)	**17.** (4)	**18.** (4)	**19.** (1)	**20.** (2)
21. (2)	**22.** (1)	**23.** (4)	**24.** (1)	**25.** (2)	**26.** (1)	**27.** (4)	**28.** (2)	**29.** (2)	**30.** (3)
31. (2)	**32.** (4)	**33.** (2)	**34.** (2)	**35.** (4)	**36.** (4)	**37.** (3)	**38.** (1)	**39.** (3)	**40.** (3)
41. (3)	**42.** (1)	**43.** (2)	**44.** (2)	**45.** (3)	**46.** (4)	**47.** (2)	**48.** (4)	**49.** (3)	**50.** (2)
51. (3)	**52.** (2)	**53.** (4)	**54.** (1)	**55.** (2)	**56.** (2)	**57.** (4)	**58.** (4)	**59.** (3)	**60.** (3)
61. (3)	**62.** (4)	**63.** (1)	**64.** (4)	**65.** (1)	**66.** (2)	**67.** (3)	**68.** (3)	**69.** (1)	**70.** (4)
71. (2)	**72.** (3)	**73.** (1)	**74.** (2)	**75.** (2)	**76.** (3)	**77.** (2)	**78.** (1)	**79.** (2)	**80.** (4)
81. (1)	**82.** (2)	**83.** (4)	**84.** (2)	**85.** (3)	**86.** (3)	**87.** (2)	**88.** (2)	**89.** (3)	**90.** (1)
91. (2)	**92.** (3)	**93.** (4)	**94.** (1)	**95.** (3)	**96.** (1)	**97.** (3)	**98.** (3)	**99.** (2)	**100.** (2)

Hints & Solutions

Part-I
(General Intelligence & Reasoning)

1. (1) As, 'Stars' appear in the 'Night', similarly 'Sun' appears in the 'Day'.

2. (3) B E H : K N Q :: F I L : O R U
(+9, +9, +9 and +9, +9, +9)

3. (2) 6 : –3 :: –18 : 9
(÷ (–2) and ÷ (–2))

4. (2) Except Crimson, all others are different shade of blue colour.

5. (2) J $\xrightarrow{+6}$ P $\xrightarrow{+6}$ V
U $\xrightarrow{+14}$ I $\xrightarrow{+6}$ O
K $\xrightarrow{+6}$ Q $\xrightarrow{+6}$ W
L $\xrightarrow{+6}$ R $\xrightarrow{+6}$ X

6. (3) Except '100', all other options are perfect cubes.

7. (4) The next word of the series starts with the last two letters of the previous word.
employ → oyster → error → ornate → tennis → isomer

8. (1) xxxxxo xxxxox xxxoxx xxoxxx xoxxxx **oxxxxxx**

9. (1) $-\frac{7}{4}$, –1, –0.25, **0.5**, $\frac{5}{4}$, 2
(+$\frac{3}{4}$, +$\frac{3}{4}$, +$\frac{3}{4}$, +$\frac{3}{4}$, +$\frac{3}{4}$)

10. (3) Number of days from 28th May to 19th October
= 3 + 30 + 31 + 31 + 30 + 19
= 144
= 144 ÷ 7
= 20 weeks + 4 odd days
Number of odd days = 4
∴ Required day = Sunday + 4
= Thursday

11. (2) Weight cannot be form from the given weight (Kg) = 170

12. (3) There is no 'E' letter in the given word.

∴ The word REALM cannot be formed.

13. (1)

P	O	N	D	E	R	S
–1	–1	–1	–1	–1	–1	–1
O	N	M	C	D	Q	R

Similarly,

M	A	T
–1	–1	–1
L	**Z**	**S**

14. (4) 80 × 16 ÷ 4 + 2 – 8 =?

Changing signs according to question,

80 ÷ 16 – 4 × 2 + 8 = ?

5 – 8 + 8 = ?

∴ ? = 5

15. (1) As, 35% 31 ⇒ (3 + 5) + (3 + 1) = 12

92% 30 ⇒ (9 + 2) + (3 + 0) = 14

Similarly,

15% 24 ⇒ (1 + 5) + (2 + 4) = **12**

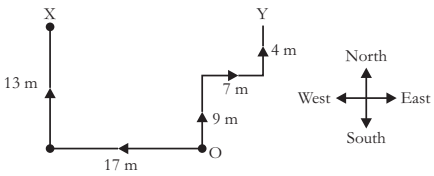
16. (3) As, 314 – 39 = 275

205 – 102 = 103

Similarly, 111 – 34 = ?

⇒ ? = 77

17. (4) Starting point = O



∴ Required distance = 17 + 7

= 24 m

18. (4) Neither argument I nor argument II is strong. We know that citing an example is a bad argumentation. Songs are included into the movies to give some special effects and depict certain scenes or moments elegantly.

19. (1) Cube given against option (1) cannot be formed.

20. (2) Surgeons who are either mothers or singers can be represented by the regions common to circle and triangle as well as circle and rectangle. Such regions have been marked as A, F and C.

21. (2) 

22. (1) 

23. (4) 

24. (1) 

25. (2) S → **89**

H → **30**

O → **10**, 23

W → **13**, 33

For given word RIDE, group of letters can be represented by the numbers → 89, 30, 10, 13

Part-II
(General Awareness)

26. (1) **Current Account Deficit:** A measurement of a country trade where the value of the goods and services it import exceeds the value of the goods and services it exports.

27. (4) **Average Product:** It is defined as the output per unit of variable input.

28. (2) Taxes on lands and buildings come under State List.

29. (2) The Rajya Sabha (Council of States) is the upper house of the Parliament of India. Maharashtra sends 19 Rajya Sabha members. The present Rajya Sabha has 245 members; 233 members are elected by state assembly members and 12 are nominated by the President.

30. (3) Akbar became the king in 1556 at the age of 13. Bairam Khan was appointed as Akbar's regent.

31. (2) **Sultan Mahmud:** He was the ruler of the Ghaznavid Empire from 997 until his death in 1030. He turned Ghazni into the rich capital of an extensive empire which included modern-day Afghanistan, most of Iran and parts of north-west India including modern day Pakistan.

32. (4) **Meander:** It is a bend in a sinuous watercourse or river that forms when moving water in a stream erodes the outer banks and widens its valley and the inner part of the river has less energy and deposits silt.

33. (2) In contour barriers method, stones, grass, soil are used to build barriers along contours, while trenches are made in front of the barriers to collect water.

34. (2) A pair of testes is situated outside the abdominal cavity within a pouch called scrotum. The scrotum helps in maintaining the low temperature of the testes (2 – 2.5° lower than the normal internal body temperature) necessary for spermatogenesis.

35. (4) Algae are classified into three main classes – Chlorophyceae (Green algae), Phaeophyceae (Brown algae) and Rhodophyceae (Red algae).

36. (4) The Porifera are exclusively marine except for a single family of fresh water species.

37. (3) In Physics, if the force applied on the object is in the direction opposite to the direction of motion, the speed of the object decreases.

38. (1) The SI unit of acceleration is the meter per second squared.

39. (3) In Excel, the MIN function can be used to return the smallest value from a set of data.

40. (3) Generally, fire extinguishers use compressed non-flammable carbon dioxide gas that extinguishes work by displacing oxygen, or taking away the oxygen element of the fire triangle. CO_2 extinguishers are suitable for electrical hazard and fires involving flammable liquids like petrol, diesel and oils.

41. (3) Magnesium burns air it reacts with oxygen present in air to form magnesium oxide: $2Mg + O_2 \rightarrow 2MgO$. Magnesium oxide is a crumbly, whitish powder that looks like ash.

42. (1) Salinity is the measure of all the salts dissolved in water. Salinity is usually measured in parts per thousand (ppt or

%). The average ocean salinity is 35 ppt and the average river water salinity is 0.5 ppt or less.

43. (2) **Gram Uday Se Bharat Uday Abhiyan:** Launched by Prime Minister Narendra Modi in April 2016, aims to "generate efforts to increase social harmony across villages", "promote rural development" and "foster farmers' welfare and livelihood of the poor".

44. (2) **Photon (Light Quantum):** It refers to minute energy packet of electromagnetic radiation. The concept originated in 1905 in Albert Einstein's explanation of the photoelectric effect, in which he proposed the existence of discrete energy packets during the transmission of light.

45. (3) Chelsea won the 2016–17 Premier League champions after defeating West Bromwich Albion 1-0 at the Hawthornson 12 May, 2017. It was Chelsea's 5^{th} title of the Premier League era.

46. (4) **Gol Gumbaz:** It is the mausoleum of king Mohammed Adil Shah, sultan of Bijapur. The tomb, located in Bijapur, Karnataka in India, was completed in 1656 by the architect Yaqut of Dabul.

47. (2) Girl Crush won the award for Best Country Song at the 58^{th} Annual Grammy Awards held at the Staples Center in Los Angeles on 15 February, 2016.

48. (4) Bird Box is a 2014 post apocalyptic novel and the debut work of Josh Malerman, the lead singer of The High Strung. The Devil in Silver is a novel by Victor LaValle that was first published in 2012. Fellside, published in April 2016, has been authored by M.R. Carey.

49. (3) Australia, in April 2017, abolished the 457 Visa Programme used by thousands of temporary foreign workers, a majority of them Indians to address growing unemployment in that country.

50. (2) **SAARC Agriculture Centre (SAC):** Based in Dhaka, Bangladesh. Known as SAARC Agricultural Information Centre till 2007, SAIC is the first regional Centre established by the SAARC. It started functioning in 1988 with a mandate for information management, primarily in the field of agriculture and allied discipline.

PART-III (QUANTITATIVE APTITUDE)

51. (3) From option (3),
$3401 - 3 = 3399$
3399 is completely divisible by 11.

52. (2) M is thrice as good as workman as N.

$$M = 3N$$

Let M's 1 day work $= \frac{1}{x}$

$\therefore$ N's 1 day work $= \frac{1}{3x}$

(M + N)'s 1 day work $= \frac{1}{x} + \frac{1}{3x}$

According to question,

$$\frac{1}{x} + \frac{1}{3x} = \frac{1}{30}$$

$$\frac{3+1}{3x} = \frac{1}{30}$$

$$\frac{4}{3x} = \frac{1}{30}$$

$$\Rightarrow \quad x = 40$$

53. (4) Side of regular hexagon = 14 cm
$\therefore$ Area of regular hexagon

$$= 6 \times \frac{\sqrt{3}}{4} (\text{side})^2$$

$$= 6 \times \frac{\sqrt{3}}{4} (14)^2$$

$$= 294\sqrt{3} \text{ cm}^2$$

54. (1) Cost price of 1 T-shirt = 100
Cost price of 7 T-shirts = 700
Effective cost price of 7 shirt
$= 5 \times 100 = 500$
Discount $= 2 \times 100$
$= 200$
Required effective discount

$$= \frac{200}{500} \times 100$$

$$= 40\%$$

55. (2) Present ages of R and S = $11x$ and $17x$
According to question,

$$\frac{11x - 11}{17x - 11} = \frac{11}{20}$$

$$20(x - 1) = 17x - 11$$

$$\Rightarrow \quad 20x - 20 = 17x - 11$$

$$3x = -11 + 20$$

$$\Rightarrow \quad 3x = 9$$

$$x = \frac{9}{3} = 3 \text{ years}$$

$\therefore$ R's present age $= 11x$
$= 11 \times 3$
$= 33$ years

56. (2) Correct average

$$= \frac{(40 \times 25) - 73 + 37}{40}$$

$$= \frac{1000 - 36}{40} = \frac{964}{40}$$

$$= 24.1$$

57. (4) Jacket cost = ₹ x to the wholesaler
Profit = 5%

$\therefore$ Selling price $= \frac{105x}{100}$

$\Rightarrow$ Cost price to retailer $= \frac{105x}{100}$

$\therefore$ Selling price $= \frac{105x}{100} + \frac{105x}{100} \times \frac{10}{100}$

$$= \frac{1050x + 105x}{1000}$$

$$= \frac{1155x}{1000}$$

According to question,

$$\frac{1155x}{1000} = 4158$$

$$x = \frac{4158 \times 1000}{1155}$$

$$x = ₹\ 3600$$

58. (4) Number = x
According to question,

$$x + 84 = x \times \frac{107}{100}$$

$$100x + 8400 = 107x$$

$$7x = 8400$$

$$x = \frac{8400}{7} = 1200$$

59. (3) Average speed $= \frac{2xy}{(x+y)}$

$$= \frac{2 \times 60 \times 30}{(30 + 60)}$$

$$= \frac{2 \times 30 \times 60}{90}$$

$$= 40 \text{ km/h}$$

60. (3) S.I. = ₹ 3,200/-, Rate = 6.25%, Time = 4 years

Amount = ₹ P

By formula,

$$P = \frac{S.I. \times 100}{R \times T}$$

$$= \frac{3200 \times 100}{6.25 \times 4}$$

$$= ₹\ 12{,}800$$

61. (3) $\frac{x}{2} - \left[\frac{4\left(\frac{15}{2} - \frac{x}{3}\right)}{3}\right] = -\frac{x}{18}$

$$\frac{x}{2} - \left[\frac{30 - \frac{4x}{3}}{3}\right] = -\frac{x}{18}$$

$$\frac{x}{2} - \left[\frac{90 - 4x}{9}\right] = -\frac{x}{18}$$

$$\frac{9x - 2(90 - 4x)}{18} = -\frac{x}{18}$$

$$\frac{9x - 180 + 8x}{18} = -\frac{x}{18}$$

$$17x - 180 = -x$$

$$18x = 180$$

$$x = \frac{180}{18} = 10$$

62. (4) $a^3 + b^3 = 152$ and $a + b = 8$

By formula,

$$a^3 + b^3 = (a + b)^3 - 3ab(a + b)$$

$$152 = (8)^3 - 3 \times ab \times 8$$

$$152 = 512 - 24ab$$

or, $24ab = 360$

$\therefore$ $ab = \frac{360}{24} = 15$

63. (1) Fraction = $\frac{x}{y}$

According to question,

$$\frac{x}{y} = \frac{y}{x} + \frac{9}{20}$$

$$\frac{x}{y} - \frac{y}{x} = \frac{9}{20}$$

$$20x^2 - 20y^2 = 9xy$$

$$20x^2 - 9xy - 20y^2 = 0$$

$$20x^2 + 16xy - 25xy - 20y^2 = 0$$

$$4x(5x + 4y) - 5y(5x + 4y) = 0$$

$$(4x - 5y)(5x + 4y) = 0$$

or, $4x - 5y = 0$

or, $4x = 5y$

$\therefore$ $\frac{x}{y} = \frac{5}{4}$

64. (4) First term (a) = 7

Last term (l) = 55

$n = 9$

By formula,

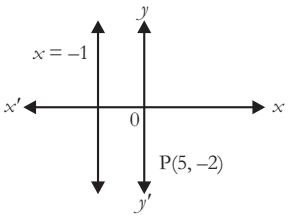
$$S = \frac{n}{2}(a + l)$$

$$= \frac{9}{2}(7 + 55)$$

$$= \frac{9}{2} \times 62$$

$$= 279$$

65. (1)

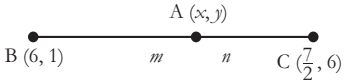


Equation $x = -1$ is parallel to y-axis.

Point (5, –2) lies in the fourth quadrant.

Its image in $x = -1$ that is parallel to y-axis will be (–6, –2) that will be (–7, –2) with respect to y-axis.

66. (2)



Let the co-ordinates of point A be (x, y).

$$m : n = 1 : 1$$

$$\therefore (x, y) = \left(\frac{mx_2 + nx_1}{m + n}, \frac{my_2 + ny_1}{m + n}\right)$$

$$= \left(\frac{4 \times \frac{7}{2} + 1 \times 6}{4 + 1}, \frac{4 \times 6 + 1 \times 1}{4 + 1}\right)$$

$$= \left(\frac{14 + 6}{5}, \frac{24 + 1}{5}\right)$$

$$= \left(\frac{20}{5}, \frac{25}{5}\right)$$

$$= (4, 5)$$

67. (3) $(x_1, y_2) = (5, -1)$

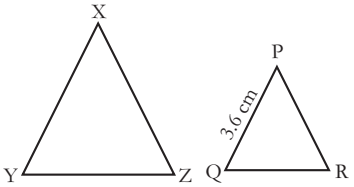
$(x_2, y_2) = (4, -4)$

$$\therefore \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-4 + 1}{4 - 5}$$

$$= 3$$

68. (3) $\Delta XYZ \sim \Delta PQR$



$$\frac{\text{Perimeter of } \Delta XYZ}{\text{Perimeter of } \Delta PQR} = \frac{XY}{PQ}$$

or, $\frac{16}{9} = \frac{XY}{3.6}$

or, $XY = \frac{16 \times 3.6}{9}$

$\therefore$ $XY = 6.4$ cm

69. (1) $\frac{1}{2}\sec 30° + \sqrt{2}\tan 60°$

$$= \frac{1}{2} \times \frac{2}{\sqrt{3}} + \sqrt{2} \times \sqrt{3}$$

$$= \frac{1}{\sqrt{3}} + \sqrt{2} \times \sqrt{3}$$

$$= \frac{1 + 3\sqrt{2}}{\sqrt{3}}$$

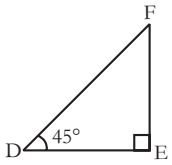
70. (4) In ΔDEF

$\angle D + \angle E + \angle F = 180°$

$45° + 90° + \angle F = 180°$

$\angle F = 180° - 135°$

$\angle F = 45°$

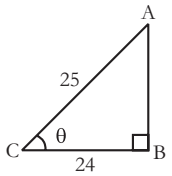


$\therefore$ cosec F × cot D

= cosec 45° × cot 45°

= $\sqrt{2} \times 1 = \sqrt{2}$

71. (2) $\sec\theta = \frac{25}{24}$



In ΔABC,

$AC^2 = AB^2 + BC^2$

$AB^2 = 25^2 - 24^2$

$AB^2 = (25 + 24)(25 - 24)$

or, $AB^2 = 49$

$\Rightarrow$ $AB = \sqrt{49} = 7$

$\therefore$ $\sin\theta = \frac{AB}{AC} = \frac{7}{25}$

72. (3) A maximum of 30 students came from country B.

73. (1) Angular measure of the sector representing Country A

$$= \frac{25}{90} \times 360 = 100°$$

74. (2) Students from Country B = 30
Students from Country E = 10
∴ Required percentage

$$= \frac{30 - 10}{10} \times 100$$

$$= \frac{20}{10} \times 100 = 200\%$$

75. (2) Total number of students
= 25 + 30 + 15 + 5 + 10 + 5 = 90
Total cost of hosting students
= 90 × 15000
= ₹ 1350000
Total spending on transport
= ₹ 9
= ₹ 900000

$$\therefore \quad \text{Required ratio} = \frac{1350000}{900000}$$

$$= 3 : 2$$

PART-IV (ENGLISH LANGUAGE)

76. (3) In the given sentence, part (3) has an error. To correct the sentence use 'in' in place of 'into'.

77. (2) In the given sentence, part (2) has an error. To correct the sentence delete 'of' before 'his'.

78. (1) **Intervention (Noun):** interference by a state in another's affairs.

79. (2) **Enthusiast (Noun):** A person who is very interested in a particular activity or subject; admirer.

80. (4) **Phonetic/Spoken (Adjective):** Using special symbols to represent each different speech sound; connected with the sounds of human speech.

Sentence → Spanish is a more phonetic language than English.

81. (1) **Astound/Bewilder (Verb):** Shock or greatly surprise; astonish; to confuse somebody.

Sentence → He was totally bewildered by her sudden change of mood.

82. (2) Opposite of Disdain is:

Admiration (Noun): Respect and warm; commendation; acclaim.

Sentence → She gazed in admiration at his broad, muscular shoulders.

83. (4) Opposite of Canonical is:

Unorthodox (Adjective): Contrary to what is usual or accepted; unconventional; not orthodox.

Sentence → Steiner was recognised as an original if unorthodox thinker.

84. (2) Something which is implied to be obvious.

Sentence → It goes without saying that lay appointees must be selected with care.

85. (3) To release someone from blame.

Sentence → I let him off because he seemed so sorry.

86. (3) For improvement of sentence use 'were having' in place of 'has had'.

87. (2) For improvement of sentence use 'were doing' in place of 'doing'.

88. (2) Best substitute of the sentence is

Verbiage (Adjective): Too many words, which makes their speech or writing difficult to understand.

Sentence → Many mission statements are nothing but empty verbiage.

89. (3) Best substitute of the sentence is

Sceptre (Noun): An ornamental rod that a king carries on ceremonial occasions as a symbol of his power.

Sentence → The sceptre of all that the professional soldier held dear was thrust into his hands.

90. (1) Correctly spelt word → Contusion (Noun)

91. (2) Correctly spelt word → Scimitars

92. (3) Logical order of the sentences to form a coherent paragraph → ZYX

93. (4) Logical order of the sentences to form a coherent paragraph → ZYX

94. (1) Passive/Active Voice

For the bake sale, two dozen cookies will be baked by Sunita.

95. (3) Indirect/Direct speech

My mother told my father that she was very busy then.

96. (1) Best option for blank → for

97. (3) Best option for blank → have

98. (3) Best option for blank → hence

99. (2) Best option for blank → learned

100. (2) Best option for blank → at

❑❑❑

8 SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 18 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Square: 90° : : Equilateral triangle : ?
(1) 30° (2) 60°
(3) 90° (4) 120°

2. ILN : FIK : : RUW : ?
(1) ORT (2) PSU
(3) NQS (4) LNQ

3. 99 : 101 : : 100 : ?
(1) 90 (2) 110
(3) 111 (4) 102

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Football (2) Hockey
(3) Carrom (4) Cricket

5. (1) ACE (2) FHJ
(3) QTW (4) KMO

6. (1) 121 (2) 44
(3) 66 (4) 111

Directions (7–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

7. tub, size, latin, formal,?
(1) smooth (2) idle
(3) scramble (4) capital

8. YXWv, TSrQ, OnML, jIHG, EDCb,?
(1) YXwV (2) ZYxW
(3) XwVU (4) YxWV

9. 2, 5, 10, 17,?, 37
(1) 24 (2) 30
(3) 32 (4) 26

10. Gurkiran's birthday is on Sunday 21st May. On what day of the week will be Shreyas's birthday in the same year if Shreyas was born on 14th November?
(1) Tuesday (2) Wednesday
(3) Friday (4) Saturday

11. The weights of 4 boxes are 40, 70, 80 and 50 kg. Which of the following cannot be the total weight, in kilogram, of any combination of these boxes and in a combination a box can be used only once?
(1) 240 (2) 160
(3) 200 (4) 220

12. From the given words, select the word which cannot be formed using the letters of the given word.
THUMBING
(1) THING (2) MIGHT
(3) HAUNT (4) THUMB

13. If HUMBLED is coded as JWODNGF, then how will WAX be coded as?
(1) DHP (2) YCZ
(3) VIS (4) JMH

14. In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
$60 \times 5 + 3 \div 24 - 6 = ?$
(1) 18 (2) 94
(3) 9 (4) 57

15. If 9@3 = 12; 15@4 = 22; 16@14 = 4; then what is the value of 6@2 = ?
(1) 26 (2) 1
(3) 30 (4) 8

16. Select the missing number from the given responses.

3	4	2	14
6	5	4	44
5	2	7	?

(1) 58 (2) 14
(3) 49 (4) 4

17. Two motorcyclists P and Q start from the same point. P rides 11 km West, then turns South and rides 16 km, then turns to his right and rides 14 km. Q rides 30 km South, then turns to his right and rides 25 km. Where is Q with respect to P now?
(1) 14 km North (2) 14 km South
(3) 44 km South (4) 44 km North

18. In the question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument?

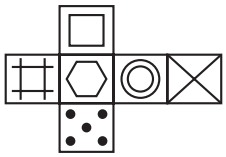
Statement:
Should mango export be banned to bring down domestic prices?

Arguments:
I. Yes, environmentalists and dieticians too encourage eating only local fruits.
II. No, exports bring in valuable foreign currency.
(1) If only argument I is strong
(2) If only argument II is strong
(3) If both arguments I and II are strong
(4) If neither argument I nor II is strong

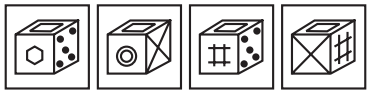
19. Which of the following cube in the answer figures cannot be made

based on the unfolded cube in the question figure?

Question Figure

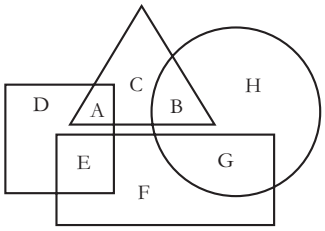


Answer Figures



(1) (2) (3) (4)

20. In the following figure, square represents Psychologists, triangle represent Chemists, circle represents Actors, rectangle represents Fathers. Which set of letters represents Psychologists and Actors who are also Fathers?

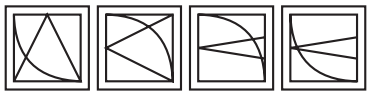


(1) G, D, A (2) F, A, C
(3) E, G (4) E, D, A

21. Which answer figure will complete the pattern in the question figure?

Question Figure

Answer Figures

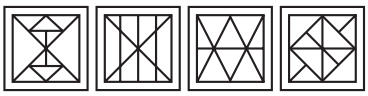


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

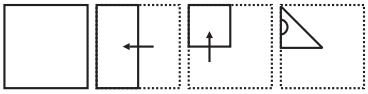
Answer Figures



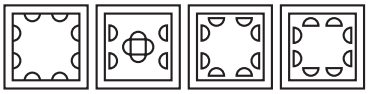
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figure



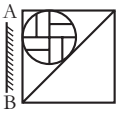
Answer Figures



(1) (2) (3) (4)

24. If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

Question Figure



Answer Figures

(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'K' can be represented by 20, 32, etc. and 'Z' can be represented by 75, 78 etc. Similarly, you have to identify the set for the word 'SHOW'.

Matrix-I

	0	1	2	3	4
0	C	J	A	B	A
1	H	L	H	I	G
2	K	M	F	J	C
3	I	B	K	D	F
4	F	I	M	H	J

Matrix-II

	5	6	7	8	9
5	R	Z	R	T	P
6	S	S	S	T	X
7	Z	S	V	Z	Y
8	Q	Y	O	S	T
9	U	V	W	S	S

(1) 21, 23, 78, 98
(2) 76, 12, 87, 97
(3) 40, 32, 76, 79
(4) 33, 23, 57, 88

PART-II
(GENERAL AWARENESS)

26. The closest example of a centrally planned economy is the ..... for the major part of the 20th Century.
(1) USA (2) India
(3) Soviet Union (4) Japan

27. ..... is the relationship between the variable input and output, keeping all other inputs are held constant.
(1) Total product
(2) Average product
(3) Isoquant
(4) The Long Run

28. ..... means cases that can be directly considered by the Supreme Court without going to the lower courts before that.
(1) Original Jurisdiction
(2) Writ Jurisdiction

(3) Appellate Jurisdiction
(4) Advisory Jurisdiction

29. Under which of the following jurisdiction can any individual, whose fundamental right has been violated, can directly move the Supreme Court for remedy?
(1) Original Jurisdiction
(2) Writ Jurisdiction
(3) Appellate Jurisdiction
(4) Advisory Jurisdiction

30. During their rule the British persuaded or forced caltivators in Bengal to grow ..... .
(1) Jute (2) Tea
(3) Sugarcane (4) Wheat

31. The Mongols under ..... invaded Transoxiana in north-east Iran in 1219.
(1) Timur Lang
(2) Nadir Shah
(3) Ahmed Shah Abdali
(4) Genghis Khan

32. In the biosphere, living beings are inter-related and interdependent on each other for survival. This life supporting system is known as the ..... .
(1) Ecosystem
(2) Mountain range
(3) Forest
(4) Atmosphere

33. The part of the Himalayas between Tista and Dihang rivers is known as ..... Himalayas.
(1) Nepal (2) Kashmir
(3) Assam (4) Jammu

34. Other name of Platelets is:
(1) Leucocytes (2) Erythrocytes
(3) Platelets (4) Thrombocytes

35. In stems, the protoxylem lies towards the centre and the metaxylem lies towards the periphery of the organ. This type of primary xylem is called:
(1) Xylem fibres
(2) Xylem parenchyma
(3) Exarch
(4) Endarch

36. ..... is the second largest animal phylum.
(1) Mollusca (2) Chordata
(3) Coelomates (4) Annelida

37. In a qualitative way, the tendency of undisturbed objects to stay at rest or to keep moving with the same velocity is called ..... .
(1) force (2) acceleration
(3) friction (4) inertia

38. The time taken by a pendulum to complete one oscillation is called its ..... .
(1) Maximum speed
(2) Average speed
(3) Time period
(4) Time interval

39. 'Teach Text' is a text editor in which of the following operating systems?
(1) Windows
(2) Google Chrome
(3) Mozilla Firefox
(4) Macintosh

40. Metals react with sodium hydroxide to produce .....
(1) oxygen gas (2) sodium
(3) water (4) hydrogen gas

41. Which base is present in lime water?
(1) Sodium hydroxide
(2) Magnesium hydroxide
(3) Calcium hydroxide
(4) Ammonium hydroxide

42. Presence of large amounts of nutrients in waters also causes excessive growth of ..... algae.
(1) Biomagnification
(2) Algal bloom
(3) Planktonic
(4) Eutrophication

43. ..... scheme launched by the Central Government plans to issue soil cards to farmers which will carry crop-wise recommendations of nutrients and fertilisers.
(1) Soil Health Card
(2) Shyama Prasad Mukherji Urban Mission
(3) Pradhan Mantri Fasal Bima Yojana
(4) National R-URBAN Mission

44. Who invented the electric tram?
(1) James Cook
(2) William Harvey
(3) Fyodor Pirotsky
(4) Robert Boyles

45. Who was the 2015 Men's Rugby World Cup Winner?
(1) New Zealand (2) South Africa
(3) Australia (4) England

46. Indian Mughal paintings originated during the rule of which Mughal Emperor?
(1) Humayun (2) Akbar
(3) Jahangir (4) Shah Jahan

47. Which of the following won the Best Film in 62nd Filmfare Awards 2017?
(1) Dangal (2) Rustom
(3) Airlift (4) Udta Punjab

48. Which of the statements given below are correct?
1. The author of the novel 'Forty Thieves' is Thomas Perry.
2. The author of the novel 'Half of a Yellow Sun' is Jennifer Egan.
3. The author of the novel 'Middlesex' is Chimamanda Ngozi Adichie.
(1) Only 1 (2) 2 and 3
(3) 1 and 3 (4) 1, 2 and 3

49. What was USA's rank in 2016 Human Development Index published by the United Nations Development Programme?
(1) 1 (2) 10
(3) 100 (4) 200

50. The Delhi – Lahore Bus is officially known as .....
(1) Sada-e-Sarhad
(2) Maitree bus
(3) Yaad-e-Shaheed
(4) Dosti bus

PART-III
(QUANTITATIVE APTITUDE)

51. What is the remainder when 6729 is divided by 35?
(1) 11 (2) 7
(3) 9 (4) 13

52. A, B and C can finish a job working alone in 72, 24 and 36 days

respectively. In how many days they can finish the job if they worked together?
(1) 12 days (2) 9 days
(3) 15 days (4) 18 days

53. Area of 4 walls of a cuboid is 448 cm^2, its length is 18 cm and height is 8 cm. What is its breadth (in cm)?
(1) 10 cm (2) 9 cm
(3) 8 cm (4) 7 cm

54. At 10% discount the selling price of an article is ₹ 4,500/-, what is the selling price (in ₹) if the discount is 27.5%?
(1) ₹ 4,000/- (2) ₹ 3,625/-
(3) ₹ 3,500/- (4) ₹ 3,125/-

55. What is the fourth proportional to 72, 168 and 150?
(1) 450 (2) 300
(3) 350 (4) 400

56. What is the average of all numbers between 11 and 80 which are divisible by 6?
(1) 46 (2) 47
(3) 44 (4) 45

57. A trade had 960 kg of rice. He sold a part of it at 20% profit and the rest at 8% profit, so that he made a total profit of 12%. How much rice (in kg) did he sell at 8% profit?
(1) 460 kg (2) 560 kg
(3) 540 kg (4) 640 kg

58. If 40% of $x = y$, then y% of 40 is same as ..... of x.
(1) 16% (2) 4%
(3) 8% (4) 160%

59. Excluding stoppages, the speed of a bus is 72 km/h and including stoppages, it is 60 km/h. For how many minutes does the bus stop per hour?
(1) 12 min (2) 8 min
(3) 15 min (4) 10 min

60. The simple and compound interest that can be earned in two years at the same rate is ₹ 1,500/- and ₹ 1,575/- respectively. What is the rate (% per annum) of interest?
(1) 8 (2) 10
(3) 12 (4) 5

61. If $\frac{\left[7\left(\frac{5x}{3}-\frac{3}{2}\right)\right]}{2}+\frac{3}{2}=\frac{1}{4}$, then what is the value of x?
(1) $\frac{35}{24}$ (2) $\frac{24}{35}$
(3) $-\frac{24}{35}$ (4) $-\frac{35}{24}$

62. If $a^3 + b^3 = 19$ and $ab = -6$, then what is the value of $a + b$?
(1) 5 (2) 7
(3) 1 (4) –5

63. Sum of four times a fraction and 6 times its reciprocal is 11. What is the fraction?
(1) $\frac{3}{4}$ (2) $\frac{4}{3}$
(3) $\frac{4}{7}$ (4) $\frac{7}{4}$

64. What is the sum of the first 12 terms of an arithmetic progression if the 3^{rd} term is – 13 and the 6^{th} term is – 4?
(1) 67 (2) 45
(3) – 30 (4) – 48

65. What is the reflection of the point (5, 2) in the line $x = -3$?
(1) (–11, 2) (2) (–11, – 2)
(3) (11, – 2) (4) (11, 2)

66. What are the co-ordinates of the centroid of a triangle, whose vertices are A(1, –5), B(4, 0) and C(–2, 2)?
(1) (1, – 1) (2) (–1, 1)
(3) (2, – 2) (4) (–2, 2)

67. Slope of the line AB is $-\frac{4}{3}$. Co-ordinates of points A and B are (x, –5) and (–5, 3) (–5, 3) respectively. What is the value of x?
(1) – 1 (2) 2
(3) – 2 (4) 1

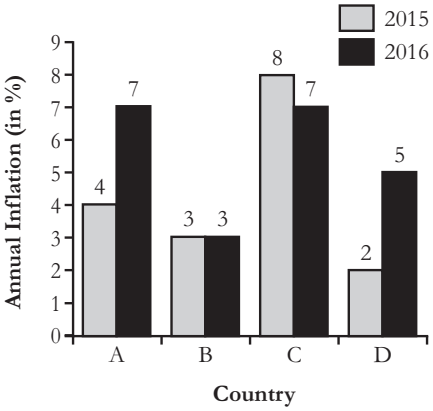
68. D and E are points on side AB and AC of ΔABC. DE is parallel to BC. If AD : DB = 2 : 5 and area of ΔADE is 8 cm, what is the ratio of area of ΔADE to area of quadrilateral BDEC?
(1) 4 : 45 (2) 45 : 4
(3) 8 : 45 (4) 45 : 8

69. What is the value of $\sqrt{2}$ sec 45° – tan 30°?
(1) $\frac{(2\sqrt{3}-1)}{3}$ (2) $\frac{(\sqrt{3}-1)}{\sqrt{3}}$
(3) $\frac{(2\sqrt{3}-1)}{\sqrt{3}}$ (4) $\frac{(\sqrt{3}-1)}{3}$

70. ΔABC is right angled at B. If $m\angle A = 60°$, then what is the value of $\frac{1}{\sqrt{3}}$ cosec C?
(1) $\frac{2}{\sqrt{3}}$ (2) $\frac{2}{3}$
(3) $\frac{\sqrt{2}}{\sqrt{3}}$ (4) $\frac{\sqrt{2}}{3}$

71. If cosec $\theta = \frac{25}{7}$, then what is the value of cot θ?
(1) $\frac{24}{25}$ (2) $\frac{7}{24}$
(3) $\frac{7}{25}$ (4) $\frac{24}{7}$

Directions (72–75): The bar graph shows annual inflation in two years 2015 and 2016 of four countries (A, B, C, D). Study the diagram and answer the following questions.



72. In which country inflation in 2016 was lower than that of the previous year?
(1) C (2) A
(3) B (4) D

73. By what percent inflation in 2016 was greater than the inflation in 2015 in country D?
(1) 60% (2) 100%
(3) 150% (4) 120%

74. In the year 2015, what is the ratio of inflation in country C to country A?
(1) 1 : 2 (2) 2 : 3
(3) 3 : 2 (4) 2 : 1

75. If inflation is measured as increase in price index and the price index was 200 in the beginning of 2015 in country D then what is the index at the end of 2016?
(1) 207 (2) 207.2
(3) 210 (4) 214.2

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. Several great battles (1)/ took place among (2)/ the British and the Americans. (3)/ No error (4)

77. The stream gurgled (1)/ contentedly as it (2)/ slowed to rounding the bend. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. The criminal changed his name to an ..... in order to elude the police.
(1) alternative (2) alias
(3) option (4) untrue

79. The ..... my husband and I had was so loud it woke our children.
(1) quarrel (2) coral
(3) moral (4) laurel

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Litter
(1) Trash (2) Order
(3) Possess (4) System

81. Obliterate
(1) Construct (2) Annihilate
(3) Revive (4) Initiate

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Scrimp
(1) Skimp (2) Conserve
(3) Squander (4) Curtail

83. Guzzle
(1) Carouse (2) Starve
(3) Imbibe (4) Quaff

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. To heave a sigh of relief
(1) To become very tired with routine or boring work
(2) To suddenly feel very happy because something unpleasant has not happened or has ended
(3) To feel extremely sad over someone else's misfortune
(4) To feel silent anger over real or perceived injustice

85. To be on cloud nine
(1) To extremely happy
(2) To feely lucky
(3) To experience the feeling of being intoxicated
(4) To make one last attempt

Directions (86–87): Improve the **bold** part of the sentence.

86. She was uneasy because she **never be** on a plane before.
(1) had never been
(2) never been
(3) is never been
(4) No improvement

87. No one knows how he escaped **dash** to pieces.
(1) being dash
(2) being dashed
(3) dashed
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

88. The upward force that a fluid exerts on a body floating in it
(1) Upthrust (2) Plunge
(3) Submerge (4) Capsize

89. The use of irony to mock or convey contempt
(1) Sanction (2) Flatter
(3) Compliment (4) Sarcasm

Directions (90–91): In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

90. (1) Threashing (2) Thrasheing
(3) Threasheing (4) Thrashing

91. (1) Conssensus (2) Consenssus
(3) Consensus (4) Cossenssus

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. As for ourselves, we
X. combing our hair
Y. a good wash and
Z. were contented with
(1) ZXY (2) YZX
(3) YXZ (4) ZYX

93. If there is a
X. corresponding sensation
Y. kind, there has to be a
Z. change in brain activity of a certain
(1) ZXY (2) ZYX
(3) YZX (4) YXZ

94. In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
The fire destroyed the whole neighbourhood.
(1) The whole neighbourhood is destroyed by the fire.

(2) The whole neighbourhood was destroyed by the fire.
(3) The whole neighbourhood was being destroyed by the fire.
(4) The whole neighbourhood is being destroyed by the fire.

95. In the following question, a sentence has been given in Direct/ Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
The accused said to the judge, "Let me meet my children before I die, sir".
(1) The accused requests the judge to let him meet his children before he died.
(2) The accused requested the judge to let him meet his children before he died.
(3) The accused begs the judge to allow him to meet his children before he dies.
(4) The accused begged the judge to let him meet his children before he dies.

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

"Jim Crow" shuns the mountains for reasons satisfactory to himself; not so the magpie, the raven, and **...(96)...** mischief-maker, Clark's nutcracker. All of which keeps the bird-lover from the East in an ecstasy of surprises until he has **...(97)...** accustomed to his changed environment. One cannot help **...(98)...** into the speculative mood in view of the sharp contrasts **...(99)...** the birds of the East and **...(100)...** of the West.

96. (1) what (2) it
(3) that (4) there

97. (1) became (2) becomes
(3) to be (4) become

98. (1) to fall (2) fallen
(3) falling (4) fell

99. (1) beside (2) beneath
(3) between (4) below

100. (1) whose (2) this
(3) those (4) whom

Short Answers

1. (2)	**2.** (1)	**3.** (4)	**4.** (3)	**5.** (3)	**6.** (4)	**7.** (4)	**8.** (2)	**9.** (4)	**10.** (1)
11. (4)	**12.** (3)	**13.** (2)	**14.** (1)	**15.** (4)	**16.** (3)	**17.** (2)	**18.** (2)	**19.** (1)	**20.** (3)
21. (4)	**22.** (1)	**23.** (3)	**24.** (1)	**25.** (2)	**26.** (3)	**27.** (1)	**28.** (1)	**29.** (2)	**30.** (1)
31. (4)	**32.** (1)	**33.** (3)	**34.** (4)	**35.** (4)	**36.** (1)	**37.** (1)	**38.** (3)	**39.** (4)	**40.** (4)
41. (3)	**42.** (2)	**43.** (1)	**44.** (3)	**45.** (1)	**46.** (1)	**47.** (1)	**48.** (1)	**49.** (2)	**50.** (1)
51. (3)	**52.** (1)	**53.** (1)	**54.** (2)	**55.** (3)	**56.** (4)	**57.** (4)	**58.** (1)	**59.** (4)	**60.** (2)
61. (2)	**62.** (3)	**63.** (1)	**64.** (3)	**65.** (1)	**66.** (1)	**67.** (4)	**68.** (1)	**69.** (3)	**70.** (1)
71. (4)	**72.** (1)	**73.** (3)	**74.** (4)	**75.** (4)	**76.** (2)	**77.** (3)	**78.** (2)	**79.** (1)	**80.** (1)
81. (2)	**82.** (3)	**83.** (2)	**84.** (2)	**85.** (1)	**86.** (4)	**87.** (2)	**88.** (1)	**89.** (4)	**90.** (4)
91. (3)	**92.** (4)	**93.** (2)	**94.** (2)	**95.** (2)	**96.** (3)	**97.** (4)	**98.** (3)	**99.** (3)	**100.** (3)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (2) As each angle measures '90°' in the 'Square', similarly each angle measures '60°' in 'Equilateral triangle'.

2. (1) I L N R U W
–3 –3 –3 –3 –3 –3
F I K **O R T**

3. (4) 99 : 101 :: 100 : **102**
+2 +2

4. (3) Except Carrom, all others are outdoor games. Carrom is an indoor game.

5. (3) A $\xrightarrow{+2}$ C $\xrightarrow{+2}$ E
F $\xrightarrow{+2}$ H $\xrightarrow{+2}$ J
Q $\xrightarrow{+3}$ T $\xrightarrow{+3}$ W
K $\xrightarrow{+2}$ M $\xrightarrow{+2}$ O

6. (4) Except '111', all other options are the multiples of 11.

7. (4) The number of letters in the words is increasing by one from left to right.

8. (2) YXWv TSrQ OnML jIHG EDCb **ZYxW**
–2 –2 –2 –2 –2

9. (4) 2 5 10 17 **(26)** 37
+3 +5 +7 +9 +11

10. (1) Number of days from 21st May to 14th November
= 10 + 30 + 31 + 31 + 30 + 31 + 14
= 177
= 177 ÷ 7
= 25 weeks + 2 odd days.
Number of odd days = 2
∴ Required day = Sunday + 2
= Tuesday

11. (4) Weight cannot be form from the given weight (kg) = 220

12. (3) There is no 'A' letter in the given word.
∴ Word 'HAUNT" cannot be formed.

13. (2)

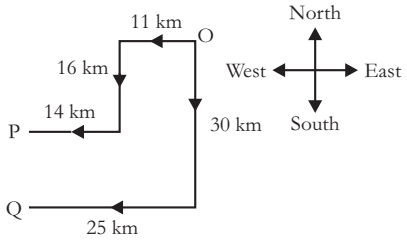
H	U	M	B	L	E	D
+2	+2	+2	+2	+2	+2	+2
J	W	O	D	N	G	F

14. (1) 60 × 5 + 3 ÷ 24 – 6 =?
Changing signs according to question,
60 ÷ 5 × 3 – 24 + 6 =?
12 × 3 – 24 + 6 = ?
36 – 24 + 6 = ?
42 – 24 = ?
? = 18

15. (4) As, 9 @ 3 ⇒ 9 – 3 = 6
⇒ 6 × 2 = 12
15 @ 4 ⇒ 15 – 4 = 11
⇒ 11 × 2 = 22
16 @ 14 ⇒ 16 – 14 = 2
2 × 2 = 4
Similarly, 6 @ 2 ⇒ 6 – 2 = 4
⇒ 4 × 2 = 8

16. (3) As, (3 + 4) × 2 = 14
(6 + 5) × 4 = 44
Similarly,(5 + 2) × 7 = 49

17. (2) Starting point = 0



∴ Required distance = 30 – 16
= 14 km South

18. (2) Argument II highlights important fact.
∴ Only argument II is strong.

19. (1) Cube given against option (1) cannot be formed.

20. (3) Psychologists who are fathers can be represented by the letter common to the square and the rectangle. Such letter is 'E'.
Actors who are fathers can be represented by the letter common to the circle and the rectangle. Such letter is 'G'.

21. (4) 

22. (1) 

23. (3) 

24. (1) 

25. (1) S → 65, 66, 67, **76**, 88, 98, 99
H → 10, **12**, 43
O → **87**
W → **97**
For given word SHOW, group of letters can be represented by the numbers → 76, 12, 87, 97

PART-II
(GENERAL AWARENESS)

26. (3) **Centrally Planned Economy:** It is one in which the total direction and development of a nation's economy is planned and administered by its government. The planning evolved in the Soviet Union following the Bolshevik Revolution of 1917.

27. (1) Total product of a factor is the amount of total output produced by a given amount of the factor, other factors held constant. As the amount of a factor increases, the total output increases.

28. (1) The Supreme Court has original, appellate and advisory jurisdiction. Its exclusive original jurisdiction extends to any dispute between the Government of India and one or more States or between the Government of India and any State or States on one side and one or more States on the other or between two or more States. It has been conferred with power to direct transfer of any civil or criminal case from one State High Court to another State High Court or from a Court subordinate to another State High Court.

29. (2) The constitution of India has designed for the enforcement of fundamental rights and for a judicial review of administrative actions, in the form of writs. It is a constitutional remedy available to a person to bring his complaint or grievance against any administrative action to the notice of the court. Writ jurisdiction is exercised by the Supreme Court and the High Courts only. This power is conferred to Supreme Court by Article 32 and to high courts by Article 226.

30. (1) The British forced Indian farmers to produce jute in Bengal, tea in Assam, sugarcane in Uttar Pradesh, wheat in Punjab, cotton in Maharashtra and Punjab and rice in Madras.

31. (4) Genghis Khan and his army started war against the Khwarezmid Empire in 1219. He sent special troops to find and kill Shah Ala al-Din Muhammad II, the shah who murdered Genghis' envoys. In 1219, Mongols begin a campaign against Transoxiana, comprising parts of Uzbekistan, Tajikistan, Kyrgyzstan and Kazakhstan.

32. (1) **Ecosystem:** It is a community of plants and animals interacting with each other in a given area and also with their non-living environments. The ecosystem relates to the way that all these different organisms live in close proximity to each other and how they interact with each other.

33. (3) The Assam Himalayas extends for a distance of 720 kilometers between the river Tista and the Dihang (Tsangpo-Brahmaputra).

34. (4) • Red Blood cells (Erythrocytes)
• White Blood Cells (Leukocytes)
• Platelets (Thrombocytes)

Blood is the fluid in living organism that transports oxgygen and nutrients to the cells in the body. Platelets are the part of the blood that helps to prevent blood loss through wounds by forming clot and fight off infections.

35. (4) Endarch is the arrangement in which the protoxylem is directed towards the centre and metaxylem elements towards the periphery.

36. (1) The phylum Mollusca is the second-largest animal phylum, with over 100,000 species. The molluscs include many familiar animals, including clams, snails, slugs and squid, as well as some less familiar animals, like tusk shells and chitons.

37. (1) Inertia is the resistance of any physical object to any change in its state of motion. Includes changes to the object's speed, direction, or state of rest. It is also defined as the tendency of objects to keep moving in a straight line at a constant velocity.

38. (3) Time period is the time taken by the bob of the simple pendulum to make one complete oscillation. The distance between the point of suspension of the pendulum and its Centre of Gravity (C.G.), which is the C.G. of the bob, is called the length of the simple pendulum.

39. (4) **Teach Text Application:** It is a simple text editor made by Apple Computer and included with System 7.1 and earlier.

40. (4) Metals react with Sodium hydroxide to produce hydrogen gas.

Example: Sodium hydroxide reacts with aluminium and water to release hydrogen gas. The aluminium takes the oxygen atom from sodium hydroxide, which in turn takes the oxygen atom from the water and releases the two hydrogen atoms. The reaction thus produces hydrogen gas and sodium aluminate.

41. (3) Limewater is the common name for a diluted solution of calcium hydroxide. Limewater is prepared by stirring calcium hydroxide in pure water and filtering off the excess undissolved $Ca(OH)_2$.

42. (2) Algal Bloom or Algae Bloom is a rapid increase in the population of algae in freshwater or marine water systems and is often recognised by the discoloration in the water from their pigments.

43. (1) Soil Health Card scheme launched by the Central Government plans to issue soil cards to farmers which will carry crop-wise recommendations of nutrients and fertilisers. This scheme is being implemented in collaboration with State Governments.

44. (3) **Fyodor Pirotsky:** Russian engineer of Ukrainian origin and inventor of the world's first railway electrification system and electric tram. While the commercialisation of his inventions in Russia was relatively slow, Pirotsky is known to have met with Carl Heinrich von Siemens and influenced Siemens' eventual introduction of the first regular electric tram line.

45. (1) **Rugby World Cup 2015** was the eighth Rugby World Cup hosted by England. New Zealand won the cup and defended their title by defeating Australia in the final. This was the first Rugby World Cup where no Northern Hemisphere team got beyond the quarter finals.

46. (1) The foundation of Mughal painting was laid by Humayun during his exile from India in Persia and Afghanistan. Two of Persia's greatest painters Mir Sayyid Ali and Abdus Samad came with him to Delhi and helped to produce some paintings.

47. (1) Best Film in 62nd Film Fare Awards 2017 – Dangal.

48. (1) 'Forty Thieves' is a novel by Thomas Perry.

- 'Half of a Yellow Sun' is a novel by Nigerian author Chimamanda Ngozi Adichie.
- 'Middlesex' is a Pulitzer Prize winning novel by Jeffrey Eugenides published in 2002.

49. (2) United States HDI value for 2015 is 0.920 which put the country in the very high human development category, positioning it at 10 out of 188 countries and territories.

50. (1) Delhi–Lahore Bus (Sada-e-Sarhad) is a passenger bus service connecting the Indian capital of Delhi with the city of Lahore, Pakistan via the border transit post at Wagah.

PART-III (QUANTITATIVE APTITUDE)

51. (3) $35\overline{)6729}\,(192$

35

322

315

79

70

$9 \rightarrow$ Remainder

52. (1) A's 1 day work $= \frac{1}{72}$

B's 1 day work $= \frac{1}{24}$

C's 1 day work $= \frac{1}{36}$

$\therefore$ (A + B + C)'s 1 day work

$= \frac{1}{72} + \frac{1}{24} + \frac{1}{36}$

$= \frac{1+3+2}{72}$

$= \frac{6}{72} = \frac{1}{12}$

$\therefore$ (A + B + C) can finish the work = 12 days

53. (1) Breadth of the cuboid = b cm

Area of four walls of cuboid $= 2(l + b) \times h$

$448 = 2(18 + b) \times 8$

$18 + b = 28$

or, $b = 28 - 18$

$\therefore$ $b = 10$ cm

54. (2) Discount = 10%, S.P = ₹ 4,500

C.P. $= 4500 \times \frac{100}{90}$

= ₹ 5,000

If discount = 27.5%, then,

S.P. $= 5000 \times \frac{72.5}{100}$

= ₹ 3,625

55. (3) Fourth proportional = x

i.e., 72 : 168 : : 150 : x

$\frac{72}{168} = \frac{150}{x}$

$\Rightarrow$ $x = \frac{150 \times 168}{72}$

$\therefore$ $x = 350$

56. (4) Required average

$$= \frac{12+18+24+30+36+42+48+54+60+66+72+78}{12}$$

$$= \frac{540}{12} = 45$$

57. (4) Trader sells x kg of rice at 8% profit,

According to question,

$$x \times \frac{108x}{100} + (960 - x) \times \frac{120}{100} = 960 \times \frac{112}{100}$$

or, $108x + 115200 - 120x = 107520$

or, $12x = 7680$

$\therefore \quad x = 640$ kg

58. (1) 40% of $x = y$

$$\Rightarrow \quad \frac{40x}{100} = y$$

$$y\% \text{ of } 40 = \frac{y}{100} \times 40 = \frac{40x}{100} \times \frac{1}{100} \times 40 = \frac{16x}{100} = 16\% \text{ of } x$$

59. (4) Due to stoppages the bus covers = 72 – 60 = 12 km less.

$\therefore$ Time taken to cover 12 km

$$= \frac{12}{72} \times 60 = 10 \text{ min}$$

60. (2) CI = ₹ 1,575/- SI = ₹ 1,500/- Rate =?

By formula,

$$\frac{CI}{SI} = \frac{200+r}{200}$$

$$\frac{1575}{1500} = \frac{200+r}{200}$$

$$15(200+r) = 2 \times 1575$$

$$200 + r = 2 \times 105$$

$$200 + r = 210$$

$$r = 210 - 200$$

$$r = 10\%$$

61. (2) $\dfrac{\left[7\left(\frac{5x}{3} - \frac{3}{2}\right)\right]}{2} + \frac{3}{2} = \frac{1}{4}$

$$\frac{\left(\frac{35x}{3} - \frac{21}{2}\right)}{2} = \frac{1}{4} - \frac{3}{2}$$

$$\frac{70x - 63}{2 \times 6} = \frac{1-6}{4}$$

$$\frac{70x - 63}{2 \times 6} = \frac{-5}{4}$$

$$70x - 63 = -15$$

$$70x = -15 + 63$$

$$70x = 48$$

$$x = \frac{48}{70} = \frac{24}{35}$$

62. (3) $a^3 + b^3 = 19$

and $ab = -6$

By formula,

$$a^3 + b^3 = (a+b)^3 - 3ab(a+b)$$

$$19 = (a+b)^3 + 18(a+b)$$

Let $a + b = x$

$\Rightarrow \quad x^3 + 18x - 19 = 0 \quad$ ... (i)

Putting $x = 1$ in the equation (i),

$$1^3 + 18x - 19 = 0$$

$$0 = 0$$

$\therefore \quad (a+b) = x = 1$

63. (1) Fraction = $\frac{x}{y}$

According to question,

$$4 \times \frac{x}{y} + 6 \times \frac{y}{x} = 11$$

$$4x^2 + 6y^2 = 11xy$$

$$4x^2 - 11xy + 6y^2 = 0$$

$$4x^2 - 8xy - 3xy + 6y^2 = 0$$

$$4x(x-2y) - 3y(x-2y) = 0$$

$$(x-2y)(4x-3y) = 0$$

$\therefore \quad \frac{x}{y} = \frac{2}{1}, \frac{3}{4}$

64. (3) First term = a and common difference = d of an A.P.

Then, $A_3 = a + (3-1)d - 13$

$$= a + 2d \quad \text{... (i)}$$

and $A_6 = a + (6-1)d$

$$-4 = a + 5d \quad \text{.... (ii)}$$

On solving equations (i) and (ii)

$$a = -19$$

and $d = 3$

By formula,

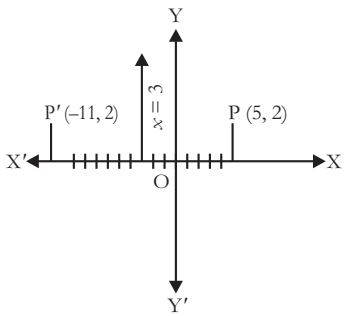
$$S = \frac{n}{2}[2a + (n-1)d]$$

$$= \frac{12}{2}[2(-19) + (12-1)3]$$

$$= 6[-38 + 33]$$

$$= 6(-5) = -30$$

65. (1)



Co-ordinates of P with respect to

$$x = -3$$

$$= (5+3, 2)$$

$$= (8, 2)$$

Position of reflection in

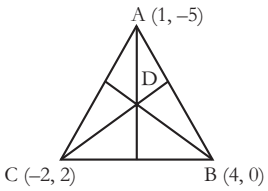
$$x = -3$$

$$= (-8, 2)$$

$\therefore$ Position of reflection with respect to y-axis

$$= (-11, 2)$$

66. (1)



Co-ordinates of the centroid of ΔABC

$$= \left(\frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}\right)$$

$$= \left(\frac{1+4-2}{3}, \frac{-5+0+2}{3}\right)$$

$$= (1, -1)$$

67. (4) $(x_1, y_1) = (x, -5)$

$(x_2, y_2) = (-5, 3)$

Slope of line AB = $m = -\frac{4}{3}$

By formula, $m = \frac{y_2 - y_1}{x_2 - x_1}$

$$\frac{-4}{3} = \frac{3+5}{-5-x}$$

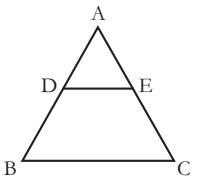
$$20 + 4x = 24$$

$$4x = 24 - 20$$

$$4x = 4$$

$$x = \frac{4}{4} = 1$$

68. (1)



$\Delta ADE \sim \Delta ABC$, AD : DB = 2 : 5

$$\frac{\text{Area of } \Delta ADE}{\text{Area of } \Delta ABC} = \left(\frac{AD}{AB}\right)^2$$

$$\frac{8}{\text{Area of } \Delta ABC} = \left(\frac{2}{7}\right)^2$$

$$\text{Area of } \Delta ABC = \frac{8 \times 49}{4}$$

$$= 98 \text{ cm}^2$$

$\therefore$ Area of quadrilateral BDCE = Area of ΔABC – Area of ΔADE

$= 98 - 8$

$= 90\ cm^2$

$\therefore$ Required ratio

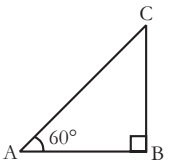
$$= \frac{\text{Area of } \Delta ADE}{\text{Area of quadrilateral BDEC}}$$

$$= \frac{8}{90} = 4 : 45$$

69. (3) $\sqrt{2}\sec 45° - \tan 30°$

$$= \sqrt{2}.\sqrt{2} - \frac{1}{\sqrt{3}} = \frac{2\sqrt{3}-1}{\sqrt{3}}$$

70. (1)



In ΔABC, $\angle A + \angle B + \angle C = 180°$

$60° + 90° + \angle C = 180°$

$\angle C = 180° - (60° + 90°)$

$\angle C = 30°$

$$\therefore \frac{1}{\sqrt{3}}\text{ cosec } C = \frac{1}{\sqrt{3}}\text{ cosec } 30°$$

$$= \frac{1}{\sqrt{3}} \times 2 = \frac{2}{\sqrt{3}}$$

71. (4) $\text{cosec}\ \theta = \frac{25}{7}$

$$\sin\theta = \frac{1}{\text{cosec}\,\theta} = \frac{7}{25}$$

$$\cot\theta = \frac{\cos\theta}{\sin\theta} = \frac{\sqrt{1-\sin^2\theta}}{\sin\theta}$$

$$= \frac{\sqrt{1-\frac{49}{625}}}{\frac{7}{25}} = \frac{\sqrt{\frac{625-49}{625}}}{\frac{7}{25}}$$

$$= \frac{24}{25} \times \frac{25}{7} = \frac{24}{7}$$

72. (1) In year 2016, the inflation of country C was lower than that of previous year.

73. (3) Inflation in 2015 in Country D = 2

Inflation in 2016 in Country D = 5

$\therefore$ Required percentage

$$= \frac{5-2}{2} \times 100$$

$$= \frac{3}{2} \times 100 = 150\%$$

74. (4) Inflation in Country C in 2015 = 8

Inflation in Country A in 2015 = 4

Required ratio = 8 : 4 = 2 : 1

75. (4) Price index at the end of 2015

$$= \frac{200 \times 105}{100} = 204$$

Price index at the end of 2016

$$= \frac{204 \times 105}{100} = 214.2$$

PART-IV (ENGLISH LANGUAGE)

76. (2) In the given sentence, part (2) has an error. To correct the sentence use 'between' in place of 'among'.

77. (3) In the given sentence, part (3) has an error. To correct the sentence delete 'to' before 'rounding'.

78. (2) **Aalias (Noun):** used for indicating that a named person is also known as or more familiar under another specified name Eric Blair, alias George Orwell.

79. (1) **Quarrel (Noun):** tiff; row; fight; argument

80. (1) **Trash/Litter (Noun):** rubbish; refuse; junk

Sentence → Don't throw litter here, there and everywhere.

81. (2) **Obliterate/Annihilate (Verb):** destroy; wipe out; exterminate

Sentence → He obliterated the memory from his mind.

82. (3) Opposite of Scrimp is:

Squander (Verb): waste; misspend; misuse.

Sentence → He has squandered away all his wealth.

83. (2) Opposite of Guzzle is:

Starve (Verb): die of hunger; die from lack of food

Sentence → She left her animals to starve.

84. (2) To suddenly, feel very happy because something unpleasant has not happened or has ended.

Sentence → We both heaved a sigh of relief when our mother left.

85. (1) **To extremely happy**

Sentence → I am on cloud nine today.

86. (4) No improvement required. Sentence is correct.

87. (2) For improvement of sentence use 'being dashed' in place of 'dash'.

88. (1) Best substitute of the sentence is

Upthrust (Noun): It is the force that pushes an object up and makes it seem to lose weight in a fluid.

89. (4) Best substitute of the sentence is

Sarcasm (Noun): a sharp; bitter gibe or taunt.

Sentence → His voice was heavy with sarcasm.

90. (4) Correctly spelt word → Thrashing

91. (3) Correctly spelt word → Consensus

92. (4) Logical order of the sentences to form a coherent paragraph → ZYX

93. (2) Logical order of the sentences to form a coherent paragraph → ZYX

94. (2) Passive/Active Voice

The whole neighbourhood was destroyed by the fire.

95. (2) Indirect/Direct speech

The accused requested the judge to let him meet his children before he died.

It is direct speech of an imperative sentence.

96. (3) Best option for blank → that (determiner).

97. (4) Best option for blank → become.

98. (3) Best option for blank → falling.

99. (3) Best option for blank → between.

100. (3) Best option for blank → Those (pronoun).

❑❑❑

9 SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 17 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Father : Parent: : Sister : ?
(1) Other (2) Brother
(3) Daughter (4) Sibling

2. WTQ : DGJ : : NKH : ?
(1) MPS (2) LOR
(3) NQT (4) ORV

3. 60 : 15 : : 100 : ?
(1) 45 (2) 35
(3) 5 (4) 25

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Chair (2) Sofa
(3) Couch (4) Television

5. (1) XVT (2) NPR
(3) LJH (4) FDB

6. (1) 1 (2) –2
(3) – (–3) (4) 5

Directions (7–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

7. bat, thin, reply, length, ?
(1) terror (2) display
(3) dome (4) scolding

8. AbC, dEfG, hljKl, MnOpQr, ?
(1) StUvWxY (2) StUvWx
(3) StUvWxYZ (4) sTuVwXy

9. 1, 0.125, $\frac{1}{27}$, $\frac{1}{64}$, ?, $\frac{1}{216}$
(1) 0.025 (2) $\frac{1}{8}$
(3) $\frac{1}{128}$ (4) 0.008

10. Hansh's birthday is on Monday 5th June. On what day of the week will be Tushar's birthday in the same year if Tushar was born on 11th December?
(1) Sunday (2) Wednesday
(3) Monday (4) Tuesday

11. The weights of 4 boxes are 40, 30, 50 and 20 kg. Which of the following cannot be the total weight, in kilogram, of any combination of these boxes and in a combination a box can be used only once?
(1) 140 (2) 130
(3) 90 (4) 100

12. From the given words, select the word which cannot be formed using the letters of the given word.
TOKENISM
(1) NAMES (2) EMITS
(3) STONE (4) NOISE

13. If SQUALOR is coded as USWCNQT, then how will WHY be coded as?
(1) CZR (2) SGY
(3) YJA (4) YPT

14. In a certain code language, '+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
9 + 3 – 72 × 6 ÷ 3 = ?
(1) 46 (2) 21
(3) 9 (4) 36

15. If 19 # 13 = 3; 25 # 3 = 11; 36 # 10 = 13, then what is the value of 7 # 3 = ?
(1) 21 (2) 2
(3) 26 (4) 39

16. Select the missing number from the given responses.

10	4	2	12
7	?	3	15
8	5	1	3

(1) 9 (2) 1
(3) 25 (4) 2

17. A and B start running from the same point. A runs 3 km West, then turns South and runs 5 km, then turns to her right and runs 7 km. B runs 1 km South then turns to her right and runs 10 km. Where is B with respect to A now?
(1) 4 km South (2) 4 km North
(3) 6 km North (4) 6 km South

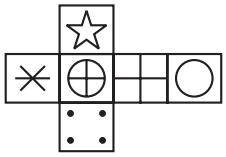
18. In the question a statement is given, followed by two arguments, I and II. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given arguments, if any, is a strong argument?

Statement:
Should speed breakers be banned?

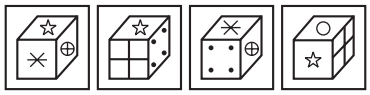
Conclusions:
I. Yes, data shows that number of accidents increase after putting the speed breakers.
II. No, it teaches fast drivers a lesson.
(1) If only argument I is strong
(2) If only argument II is strong
(3) If both arguments I and II are strong
(4) If neither argument I nor II is strong

19. Which of the following cube in the answer figure cannot be made based on the unfolded cube in the question figure?

Question Figure

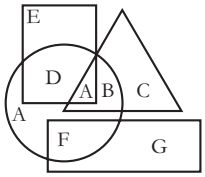


Answer Figures



(1) (2) (3) (4)

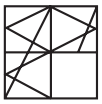
20. In the following figure, square represents Dancers, triangle represents Geologists, circle represents Architects and rectangle represents 'Mothers'. Which set of letters represents Architects who are also Geologists?



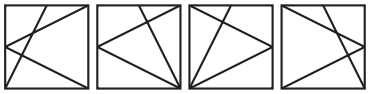
(1) A, B (2) E, D
(3) D, H, F (4) G, C

21. Which answer figure will complete the pattern in the question figure?

Question Figure



Answer Figures

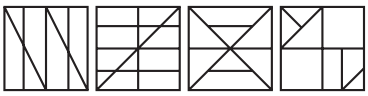


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

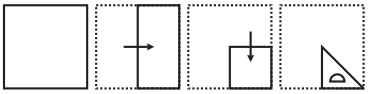
Answer Figures



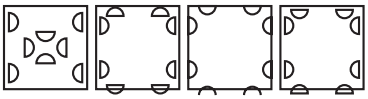
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figure



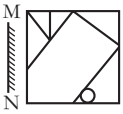
Answer Figures



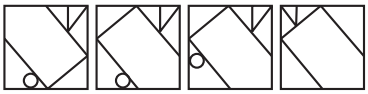
(1) (2) (3) (4)

24. If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'K' can be represented by 33, 43, etc. and 'Z' can be represented by 65, 59 etc. Similarly, you have to identify the set for the word 'SIZE'.

Matrix-I

	0	1	2	3	4
0	E	M	E	J	H
1	I	H	F	G	A
2	E	H	D	A	I
3	C	B	M	K	L
4	F	L	G	K	D

Matrix-II

	5	6	7	8	9
5	U	V	U	V	Z
6	Z	O	X	S	P
7	P	P	R	V	N
8	Q	S	N	S	W
9	S	X	T	N	S

(1) 34, 32, 98, 77
(2) 42, 00, 99, 77
(3) 03, 44, 67, 77
(4) 95, 24, 59, 20

PART-II (GENERAL AWARENESS)

26. In a centrally planned economy, the ..... plans all the important activities in the economy.
(1) Industrialists
(2) Citizens
(3) Government
(4) Judiciary

27. ..... says that if we keep increasing the employment of an input, with other inputs fixed, eventually a point will be reached after which the resulting addition to output (*i.e.,* marginal product of that input) will start falling.
(1) Law of diminishing marginal product
(2) Law of variable proportions
(3) The Short Run
(4) The Long Run

28. ..... means that the Supreme Court will reconsider the case and the legal issues involved in it.
(1) Original Jurisdiction
(2) Writ Jurisdiction
(3) Appellate Jurisdiction
(4) Advisory Jurisdiction

29. Which amendment of the Constitution of India increased the age of retirement of High Court judges from 60 to 62 years?
(1) 10^{th} (2) 12^{th}
(3) 15^{th} (4) 245^{th}

30. During their rule the British persuaded or forced cultivators in Madras to grow ..... .
(1) Jute (2) Tea
(3) Sugarcane (4) Rice

31. The queen with the title Didda ruled over which part of India between 980–1003?
(1) Avadh (2) Kashmir
(3) Sindh (4) Bengal

32. In the north-west, India shares its land boundaries with which country?
(1) Sri Lanka (2) Myanmar
(3) Bangladesh (4) Pakistan

33. The part of the Himalayas lying between Satluj and Kali rivers is known as ..... .
(1) Punjab Himalayas
(2) Nepal Himalayas
(3) Kumaon Himalayas
(4) Assam Himalayas

34. Potato, tomato and brinjal are three different species but all belong to which genus?
(1) Solanum (2) Panthera
(3) Felis (4) Tigris

35. The first formed primary xylem elements are called ..... .
(1) Metaxylem
(2) Protoxylem
(3) Xylem fibres
(4) Xylem parenchyma

36. Nereis, Pheretima (Earthworm) and Hirudinaria (blood sucking leech) are examples of which Phylum?
(1) Coelenterata (2) Aschelminthes
(3) Annelida (4) Arthropoda

37. In humans, the sound is produced by the ..... .
(1) oesophagus (2) larynx
(3) medulla (4) epiglottis

38. The vocal cords in men's are about ..... long.
(1) 10 mm (2) 20 mm
(3) 30 mm (4) 40 mm

39. The ..... uses an addressing scheme known as URL to indicate the location of files on the web.
(1) JavaScript
(2) World Wide Web
(3) SQL
(4) String

40. Most liquids that conduct electricity are solutions of acids, bases and ..... .
(1) Copper (2) Aluminium
(3) Salts (4) Iron

41. Which base is present in milk of magnesia?
(1) Magnesium hydroxide
(2) Ammonium hydroxide
(3) Sodium hydroxide
(4) Calcium hydroxide

42. ..... is the process of restoring a forest that once existed but was removed at some point of time in the past.
(1) Deforestation
(2) Reforestation
(3) Greenhouse
(4) Jhum cultivation

43. ..... scheme launched by the Central Government to eliminate open defecation by constructing toilets for households, communities.
(1) Swachh Bharat Abhiyan
(2) Gram Uday Se Bharat Uday Abhiyan
(3) Stand Up India Scheme
(4) National RURBAN Mission

44. Who discovered Sodium?
(1) Humphry Davy
(2) William Henry Fox
(3) J.J. Thomson
(4) Karl Benz

45. Who was the 2016 Men's Kabaddi World Cup runner-up?
(1) Thailand (2) Iran
(3) Argentina (4) Pakistan

46. Jama Masjid of Delhi was built in which century?
(1) 15^{th} (2) 16^{th}
(3) 17^{th} (4) 18^{th}

47. Which of the following won The Man Booker Prize 2016?
(1) The Sellout
(2) A Brief History of Seven Killings
(3) The Narrow Road to the Deep North
(4) The Luminaries

48. Which of the statements given below are correct?
1. The author of the novel 'Gilead' is Don Winslow.
2. The author of the novel 'Wolf Hall' is Stephen Dobyns.
3. The author of the novel 'To Kill a Mockingbird' is Harper Lee.
(1) 1 and 2 (2) 2 and 3
(3) Only 3 (4) 1, 2 and 3

49. What was United Kingdom's rank in 2016 Human Development Index published by the United Nations Development Programme?
(1) 4 (2) 16
(3) 64 (4) 256

50. Which railway station is used for immigration and customs of passengers who travel on the Thar Express between Pakistan and India?
(1) Jalal Marri (2) Zero Point
(3) Lal Pir (4) Gujar Garhi

PART-III
(QUANTITATIVE APTITUDE)

51. Select the correct option:
Convert binary 1101111 to decimal.
(1) 111 (2) 101
(3) 110 (4) 100

52. A can finish a work in 18 days and B in 36 days. If they work on it together for 9 days, then what percent of work is left?
(1) 33.3% (2) 20%
(3) 75% (4) 25%

53. The diagonal of a square is 12 cm what is the length (in cm) of its side?
(1) $6\sqrt{2}$ cm (2) $12\sqrt{2}$ cm
(3) 6 cm (4) 9 cm

54. If on a Sale there is 30% discount on the marked price of ₹ 2,500/-, but the sale is done at ₹ 1,400/- only. What additional discount (in %) did the customer get?
(1) 10% (2) 20%
(3) 15% (4) 25%

55. What is the third proportional to 10 and 25?
(1) 125 (2) 150
(3) 62.5 (4) 225

56. In a class of 50 students there are 27 boys. The average weight of these boys is 72 kg and average weight of the full class is 55.44 kg. What is the average weight (in kg) of the girls of the class?
(1) 42 kg (2) 48 kg
(3) 30 kg (4) 36 kg

57. If a saree is sold for ₹ 1,900/- the seller will face 5% loss, at what price (in ₹) should he sell the saree to gain 15% profit?
(1) ₹ 2,200/- (2) ₹ 2,400/-
(3) ₹ 2,500/- (4) ₹ 2,300/-

58. Pranita got 30 marks more in Math than what she got in Science. Her Math marks are 60% of the sum of her Math and Science marks. What are her Science marks?
(1) 90 (2) 150
(3) 120 (4) 60

59. To travel 432 km, an Express train takes 1 hour more than Duronto. If however, the speed of the Express train is increased by 50%, it takes 2 hours less than Duronto. What is the speed (in km/h) of Duronto train?
(1) 60 km/h (2) 54 km/h
(3) 48 km/h (4) 72 km/h

60. What is the difference (in ₹) between the compound interests on ₹ 4,000/- for 1 year at 12% per annum compounded yearly and half-yearly?
(1) ₹ 14.4 (2) ₹ 12.4
(3) ₹ 10.4 (4) ₹ 16.4

61. If $7x - \frac{[3(2x-3)]}{2} = \frac{1}{2}$, then what is the value of x?
(1) –1 (2) 1
(3) 3 (4) –3

62. If $a + b + 4$ and $ab = 3$, then what is the value of $a^3 + b^3$?
(1) 21 (2) 17
(3) 28 (4) 31

63. The sum of a fraction and 7 times its reciprocal is $\frac{11}{2}$. What is the fraction?
(1) $\frac{7}{2}$ (2) $\frac{2}{7}$
(3) $\frac{3}{4}$ (4) $\frac{4}{3}$

64. The 3^{rd} and 9^{th} term of an arithmetic progression are –8 and 10 respectively. What is the 16^{th} term?
(1) 34 (2) 28
(3) 25 (4) 31

65. What is the reflection of the point (1, 2) in the line $y = 3$?
(1) (1, –4) (2) (1, 4)
(3) (–1, –4) (4) (–1, 4)

66. Point A (2, 1) divides segment BC in the ratio 2 : 3. Co-ordinates of B are (1, –3) and C are (4, y). What is the value of y?
(1) 8 (2) –7
(3) –8 (4) 7

67. At what point does the line $2x + 5y = -6$ cuts the X-axis?
(1) (3, 0) (2) (0, 3)
(3) (–3, 0) (4) (0, –3)

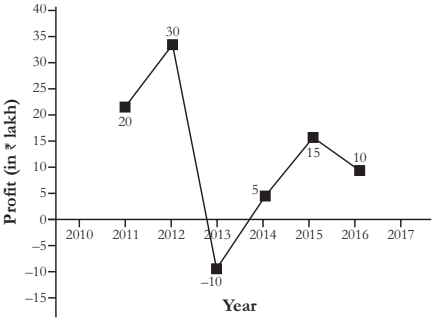
68. ΔABC is right angled at B. BD is an altitude. AD = 9 cm and DC = 16 cm. What is the value of BD (in cm)?
(1) 6 cm (2) 18 cm
(3) 21 cm (4) 12 cm

69. What is the value of $\tan 45° + \frac{4}{\sqrt{3}} \sec 60°$?
(1) $\frac{(\sqrt{3}+8)}{\sqrt{3}}$ (2) $\frac{(\sqrt{3}+8)}{3}$
(3) $\frac{(\sqrt{3}-8)}{\sqrt{3}}$ (4) $\frac{(\sqrt{3}-8)}{3}$

70. ΔDEF is right angled at E. If $m\angle D = 30°$, what is the length (in cm) of DE, if EF = $2\sqrt{3}$ cm?
(1) 3 cm (2) 4 cm
(3) 6 cm (4) 2 cm

71. If $\sin\theta = \frac{20}{29}$, then what is the value of $\cos\theta$?
(1) $\frac{29}{21}$ (2) $\frac{21}{29}$
(3) $\frac{21}{20}$ (4) $\frac{20}{29}$

Directions (72–75): The line graph shows annual profits (in ₹ lakh) of a certain company from 2011 to 2016. Study the diagram and answer the following questions.



72. The company reported a loss in which year?
(1) 2013 (2) 2016
(3) 2012 (4) 2014

73. What is the cumulative profits (in ₹ lakh) earned by the company in the given six years?
(1) 80 (2) 70
(3) 90 (4) 100

74. By what value profit in 2012 was more (in %) than the profit of 2011?
(1) 10 (2) 33.33
(3) 50 (4) 40

75. If the profits are added to the company's reserves and the reserves stood at ₹ 150 lakh at the end of 2015, what were the reserves (in ₹ lakh) in the beginning of 2012?
(1) 130 (2) 90
(3) 110 (4) 40

PART-IV
(ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. The view of the downstream (1)/ and directly down the (2)/ bridge was awesome. (3)/ No error (4)

77. His name was hardly (1)/ known out (2)/ his own country. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. The fun ..... reduced significantly when mom decided to tag along.
(1) mark (2) sign
(3) quotient (4) moment

79. The shepherd guarded a large ..... of sheep and allowed them to move from pasture to pasture.
(1) block (2) culture
(3) shoal (4) flock

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Facsimile
(1) Disparate (2) Replica
(3) Peculiar (4) Contrast

81. Chauvinism
(1) Neutral (2) Aloof
(3) Zealotry (4) Evenhanded

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Melody
(1) Chant (2) Lyric
(3) Cacophony (4) Inflection

83. Diffident
(1) Bashful (2) Demure
(3) Aggressive (4) Meek

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. To have a finger in every pie
(1) To fight with everybody
(2) To be involved in a large and varied number of activities or enterprises
(3) To make fun of everybody
(4) To leave every job unfinished

85. To make up one's mind
(1) To be prepared for unfavourable outcomes
(2) To make a decision; decide
(3) To overcome intense grief
(4) To psyche oneself into believing that the task at hand is not impossible

Directions (86–87): Improve the **bold** part of the sentence.

86. We might **have doing** something to help you.
(1) having to do
(2) has done
(3) have done
(4) No improvement

87. He **to be** positively rude.
(1) was being
(2) were being
(3) being
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

88. Distorted representation of something
(1) Travesty (2) Solemnity
(3) Seriousness (4) Gravity

89. A feeling of intense longing for something
(1) Yearning (2) Apathy
(3) Satiety (4) Gratification

Directions (90–91): In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

90. (1) Perverted (2) Pervirted
(3) Parverted (4) Parvirted

91. (1) Blandnes (2) Blandeness
(3) Blandenes (4) Blandness

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. The burning sun
X. our very
Y. seemed to be sucking
Z. blood out of us
(1) XZY (2) XYZ
(3) ZYX (4) YXZ

93. I heard the sound
X. his tool raised
Y. of the blow while I see
Z. above his head
(1) XZY (2) XYZ
(3) YXZ (4) ZYX

94. In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
The tutor always answers the students' questions.
(1) The students' questions is always answered by the tutor.
(2) Questions answered by the tutor are by the students.
(3) The students' questions are always answered by the tutor.
(4) Questions answered by the tutor is by the students.

95. In the following question, a sentence has been given in Direct/ Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
Mother said, "Will you tell me what it means, Pritam?"
(1) Mother asked Pritam if he will tell her what it meant.
(2) Mother asked Pritam that he would tell her what it meant.
(3) Mother asked Pritam if he would tell her what it meant.
(4) Mother asked Pritam that he will tell her what it meant.

Directions (96–100): A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Prebiotics are the lesser-known gut-health promoters which serve as food for good bacteria inside the gut. "We found that dietary prebiotics can improve non-REM (random eye movement) sleep, as well as REM sleep after a stressful event", said Robert Thompson, a PhD researcher at University of Colorado Boulder in the U.S. Prebiotics are dietary fibres found naturally in foods like artichokes, raw garlic, leeks and onions.

When beneficial bacteria digest prebiotic fibre, they not only multiply, improving overall gut health, but they also release metabolic by-products. Researchers fed three-week-old male rats a diet of either standard chow or chow that included prebiotics. They then monitored the rats' body temperature, gut bacteria and sleepwake cycles—using electroencephalogram (EEG), or brain activity testing over time. Findings revealed that the rats on the prebiotic diet spent more time in nonrapid-eye-movement (NREM) sleep, which is restful and restorative, than those on the non-prebiotic diet.

96. What are prebiotics?
(1) Dietary fibres
(2) Bacteria
(3) Foods like artichokes
(4) Gut microbiota

97. What type of sleep is restorative?
(1) NREM (2) REM
(3) EEG (4) ECG

98. How are metabolic by-products released?
(1) When good bacteria help sleep
(2) When good bacteria digest dietary fibres
(3) When gut becomes rich in nutrients
(4) After recovery from stress due to sleep

99. How can sleep wake cycles be monitored?
(1) By testing brain power
(2) By allowing REM and NREM sleep
(3) By Using EEG
(4) By recording body temperature

100. What is chow?
(1) Type of dietary fibre
(2) A class of nutrients
(3) Rat food
(4) Sleep enhancer

Short Answers

1. (4)	**2.** (1)	**3.** (4)	**4.** (4)	**5.** (2)	**6.** (2)	**7.** (2)	**8.** (1)	**9.** (4)	**10.** (3)
11. (2)	**12.** (1)	**13.** (3)	**14.** (4)	**15.** (2)	**16.** (4)	**17.** (2)	**18.** (1)	**19.** (2)	**20.** (1)
21. (3)	**22.** (2)	**23.** (4)	**24.** (2)	**25.** (4)	**26.** (3)	**27.** (1)	**28.** (3)	**29.** (3)	**30.** (4)
31. (2)	**32.** (4)	**33.** (3)	**34.** (1)	**35.** (2)	**36.** (3)	**37.** (2)	**38.** (2)	**39.** (2)	**40.** (3)
41. (1)	**42.** (2)	**43.** (1)	**44.** (1)	**45.** (2)	**46.** (3)	**47.** (1)	**48.** (3)	**49.** (2)	**50.** (2)
51. (1)	**52.** (4)	**53.** (1)	**54.** (2)	**55.** (3)	**56.** (4)	**57.** (4)	**58.** (4)	**59.** (2)	**60.** (1)
61. (1)	**62.** (3)	**63.** (1)	**64.** (4)	**65.** (2)	**66.** (4)	**67.** (3)	**68.** (4)	**69.** (1)	**70.** (3)
71. (2)	**72.** (1)	**73.** (2)	**74.** (3)	**75.** (3)	**76.** (2)	**77.** (2)	**78.** (3)	**79.** (4)	**80.** (2)
81. (3)	**82.** (3)	**83.** (3)	**84.** (2)	**85.** (2)	**86.** (3)	**87.** (1)	**88.** (1)	**89.** (1)	**90.** (1)
91. (4)	**92.** (4)	**93.** (3)	**94.** (3)	**95.** (3)	**96.** (1)	**97.** (1)	**98.** (2)	**99.** (3)	**100.** (3)

Hints & Solutions

Part-I
(General Intelligence & Reasoning)

1. (4) As 'Father' is related to 'Parents', similarly, 'Sister' is related to 'Sibling'.

2. (1) W T Q — Opposite pairs — D G J; N K H — Opposite pairs — M P S

3. (4) 60 : 15 :: 100 : 25 (÷4, ÷4)

4. (4) Except television, all others are furniture.

5. (2) X $\xrightarrow{-2}$ V $\xrightarrow{-2}$ T; N $\xrightarrow{+2}$ P $\xrightarrow{+2}$ R; L $\xrightarrow{-2}$ J $\xrightarrow{-2}$ H; F $\xrightarrow{-2}$ D $\xrightarrow{-2}$ B

6. (2) '–2' is a negative number.

7. (2) bat ⇒ 3 letters
thin ⇒ 4 letters
reply ⇒ 5 letters
length ⇒ 6 letters
display ⇒ 7 letters

8. (1) AbC → dEfG → hIjKl → MnOpQr → StUvWxY

9. (4) 1 0.125 $\frac{1}{27}$ $\frac{1}{64}$ **0.008** $\frac{1}{216}$

↑ ↑ ↑ ↑ ↑ ↑

$\frac{1}{1^3}$ $\frac{1}{2^3}$ $\frac{1}{3^3}$ $\frac{1}{4^3}$ $\frac{1}{5^3}$ $\frac{1}{6^3}$

10. (3) Number of days from 5th June to 11th December

= 25 + 31 + 31 + 30 + 31 + 30 + 11

= 189

= 189 ÷ 7

= 27 weeks + 0 odd day

Number of odd days = 0

∴ Required day = Monday + 0

= Monday

11. (2) All except 130 kg weight are in total combination of weights.

12. (1) There is no 'A' letter in the given word.

∴ Word 'NAMES' cannot be formed.

13. (3)

S	Q	U	A	L	O	R
+2	+2	+2	+2	+2	+2	+2
U	S	W	C	N	Q	T

W	H	Y
+2	+2	+2
Y	**J**	**A**

14. (4) 9 + 3 – 72 × 6 ÷ 3 =?

Changing signs according to question,

9 × 3 + 72 ÷ 6 – 3 = ?

27 + 12 – 3 = ?

39 – 3 = ?

∴ ? = 36

15. (2) As, 19 # 13 ⇒ 19 – 13 = 6 ⇒ 6 ÷ 2 = 3

25 # 3 ⇒ 25 – 3 = 22

⇒ 22 ÷ 2 = 11

36 # 10 ⇒ 36 – 10 = 26

⇒ 26 ÷ 2 = 13

Similarly,

7 # 3 ⇒ 7 – 3 = 4

⇒ 4 ÷ 2 = **2**

16. (4) As, 10 – 4 = 6 ⇒ 6 × 2 = 12

8 – 5 = 3 ⇒ 3 × 1 = 3

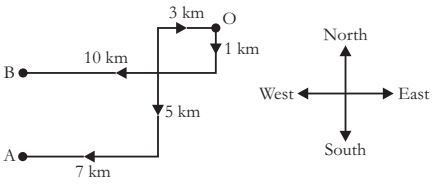
(7 –?) × 3 = 15

or, $7 - ? = \frac{15}{3}$

or, 7 –? = 5

∴ ? = 7 – 5 = 2

17. (2) Starting point = 0



∴ Required distance = 5 – 1 = 4 km north.

18. (1) Clearly, only argument I seems to be strong. It is the duty of concerned authority to prevent accidents.

19. (2) Cube given against option (2) cannot be formed.

20. (1) Architects who are Geologists can be represented by the letters which are common to the circle and the triangle. Such letters are A and B.

21. (3) 

22. (2) 

23. (4) 

24. (2) 

25. (4) S → 68, 88, 99, **95**

I → 10, **24**

Z → **59**, 65

E → 00, 02, **20**

For given word SIZE, group of letters can be represented by the numbers → 95, 24, 59, 20.

PART-II
(GENERAL AWARENESS)

26. (3) A centrally planned economy is an economic system in which the state or government makes economic decisions rather than the interaction between consumers and businesses.

27. (1) **Law of Diminishing Marginal Product:** It states that in a production process, as one input variable is increased, there will be a point at which the marginal per unit output will start to decrease, holding all other factors constant.

28. (3) According to Article 132(1) an appeal shall lie to the Supreme Court from any judgement, decree or final order of a High Court in the territory of India, whether in a civil, criminal or other proceedings, if the High Court certifies that the case involves a substantial question of law as to the interpretation of the Constitution.

29. (3) Prior to the enactment of the Constitution 15th Amendment Act, 1963, the retirement age was 60 years for High Court judges, but now is 62 years.

30. (4) The British forced Indian farmers to produce jute in Bengal, tea in Assam, sugarcane in Uttar Pradesh, wheat in Punjab, cotton in Maharashtra and Punjab and rice in Madras.

31. (2) **Didda:** She was the ruler of Kashmir from 958 AD to 1003 AD, first as a Regent for her son and various grandsons and from 980 as sole ruler and monarch. Most knowledge relating to her is obtained from the Rajatarangini, a work written by Kalhana in the 12th century.

32. (4) There is an international border in North-west that runs between India and Pakistan and demarcates the states of India from the four provinces of Pakistan.

33. (3) Kumaun Himalayas are west-central section of the Himalayas in northern India, extending 320 km from the Sutlej river east to the Kali river.

34. (1) The Solanum family of plants is a large genus under the family umbrella of Solanaceae that includes up to 2,000 species, ranging from food crops, such as the potato and the tomato, to various ornamentals and medicinal species.

35. (2) **Xylem:** It is a conducing tissue in plants that is meant to conduct water and minerals upwards from the roots to the leaf. The first xylem to develop is called 'protoxylem'.

36. (3) The annelids are grouped in three classes: the earth-worms and

freshwater worms (oligochaetes), the leeches (hirudineans) and the marine worms (polychaetes).

37. (2) The larynx is the body's "voice box" as it contains the vocal folds that produce the sounds of speech and singing.

38. (2) Adult men and women have different vocal folds sizes. The male vocal folds are between 17 mm to 25 mm and female vocal folds are between 12.5 mm to 17.5 mm in length.

39. (2) The World Wide Web (WWW) is an information space where documents and other web resources are identified by Uniform Resource Locators (URLs).

40. (3) The solution of acids, bases and salts in water are electrolytes.

41. (1) **Magnesium Hydroxide:** $Mg(OH)_2$ is a common component of antacids, such as milk of magnesia, as well as laxatives. Natural magnesium hydroxide (brucite) is used commercially as a fire retardant.

42. (2) **Reforestation:** It involves the replanting or regeneration of areas of forest which have previously been damaged or destroyed.

43. (1) **Swachh Bharat Abhiyan (Clean India Mission):** Launched on 2nd October, 2014. It is covering 4041 statutory towns across India and aims to make the streets, roads and infrastructure clean by 2nd October, 2019. The goal of this mission is also includes the elimination of open defecation, conversion of insanitary toilets to pour flush toilets, eradicating of manual scavenging and Municipal Solid Waste Management (MSWM).

44. (1) **Sir Humphry Davy (17 December 1778–29 May 1829):** He was a cornist chemist and inventor, best remembered today for isolating, using electricity a series of elements for the first time, potassium and sodium in 1807.

45. (2) **Kabaddi World Cup 2016:** It was an international Kabaddi tournament governed by the International Kabaddi Federation, contested from 7 to 22 October 2016 in Ahmedabad. The tournament was won by India, who defeated Iran in the championship game to win their third Kabaddi World Cup.

46. (3) Shahjahan in 1644, commenced in Delhi his mosque, the Jama Masjid the largest mosque in India and completed it in 1650.

47. (1) Man Booker Prize for Fiction 2016 was won by Paul Beatty, an American author, for his novel 'The Sellout'.

48. (3) Gilead (2004) is a novel written by Marilynne Robinson.

Wolf Hall (2009) is a historical novel written by English author Hilary Mantel.

To kill a Mockingbird (1960) is a novel written by American author Harper Lee.

49. (2) Norway, Australia, Switzerland and Germany lead the Human Development Index (HDI) rankings in 2016 and the position of UK was 16^{th}.

50. (2) **Zero Point Railway Station:** It is the eastern terminus of the Hyderabad-Khokhrapar Branch Line on the Pakistan India border. The station was constructed in February 2006 and is used for immigration and customs of passengers who travel on the Thar Express between Pakistan and India.

PART-III
(QUANTITATIVE APTITUDE)

51. (1) $(1101111)_2$

Multiplying each digit of the binary number by the corresponding power of 2,

$1 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$

$= 64 + 32 + 0 + 8 + 4 + 2 + 1 = 111$

52. (4) A's 1 day work $= \frac{1}{18}$

B's 1 day work $= \frac{1}{36}$

(A + B)'s 1 day work

$= \frac{1}{18} + \frac{1}{36} = \frac{2+1}{36} = \frac{3}{36} = \frac{1}{12}$

(A + B)'s 9 day work $= 9 \times \frac{1}{12} = \frac{3}{4}$

Rest of the work $= 1 - \frac{3}{4} = \frac{1}{4}$

∴ Required percentage

$= \frac{1}{4} \times 100 = 25\%$

53. (1) Side of the square = a cm.

Diagonal $= a\sqrt{2}$

$12 = a\sqrt{2}$

or, $a = \frac{12}{\sqrt{2}}$

∴ $a = 6\sqrt{2}$ cm

54. (2) Marked price = ₹ 2500

After 30% discount, selling price

$= 2500 \times \frac{70}{100}$

= ₹ 1,750

New selling price = ₹ 1,400

∴ Required discount percentage

$= \frac{1750 - 1400}{1750} \times 100$

$= \frac{350}{1750} \times 100 = 20\%$

55. (3) Third proportional = x

or, 10 : 25 : : 25 : x

$\Rightarrow \frac{10}{25} = \frac{25}{x}$

or, $x = \frac{14 \times 25}{10}$

∴ $x = 62.5$

56. (4) Total number of students = 50

Number of boys = 27

∴ Number of girls

$= 50 - 27 = 23$

Total weight of whole class

$= 50 \times 55.44$

$= 2772$ kg

Total weight of boys

$= 27 \times 72 = 1944$ kg

∴ Average weight of girls

$= \frac{2772 - 1944}{23}$

$= \frac{828}{23} = 36$

57. (4) Selling price = ₹ 1,900

Loss = 5%

∴ Cost price $= 1900 \times \frac{100}{95}$

= ₹ 2,000

If profit = 15%

Then, selling price $= 2000 \times \frac{115}{100}$

= ₹ 2,300

58. (4) Marks in science = x

∴ Marks in maths = $(x + 30)$

According to question,

$$x + 30 = (x + x + 30) \times \frac{60}{100}$$
$$10(x + 30) = (2x + 30) \times 6$$
$$10x + 300 = 12x + 180$$
$$\text{or, } 300 - 180 = 12x - 10x$$
$$\text{or, } 120x = 2x$$
$$\therefore \quad x = \frac{120}{2} = 60$$

59. (2) Speed of Duronto train = x km/h and the speed of Express train = y km/h

Total distance = 432 km

According to question,

$$\frac{432}{y} - \frac{432}{x} = 1$$
$$\frac{1}{y} - \frac{1}{x} = \frac{1}{432} \quad \text{... (i)}$$

Again, $\frac{432}{y} - \frac{432}{\frac{150y}{100}} = 2$

$$\frac{1}{x} - \frac{2}{3y} = \frac{2}{432} \quad \text{... (ii)}$$

Adding equations (i) and (ii),

$$\frac{1}{y} - \frac{2}{3y} = \frac{3}{432}$$
$$\Rightarrow \quad \frac{3-2}{3y} = \frac{1}{144}$$
$$\frac{1}{3y} = \frac{1}{144}$$
$$\Rightarrow \quad y = \frac{144}{3} \text{ km/h}$$

Putting the value of y in equation (i),

$$\frac{3}{144} - \frac{1}{x} = \frac{1}{432}$$
$$\Rightarrow \quad \frac{3}{144} - \frac{1}{432} = \frac{1}{x}$$
$$\frac{9-1}{432} = \frac{1}{x}$$
$$\Rightarrow \quad \frac{8}{432} = \frac{1}{x}$$
$$8x = 432$$
$$\Rightarrow \quad x = \frac{432}{8}$$
$$= 54 \text{ km/h}$$

60. (1) For 1 year, C.I. and S.I. are same. Therefore,

$$\text{C.I.} = \text{S.I.} = \frac{P \times R \times T}{100}$$
$$= \frac{4000 \times 12 \times 1}{100}$$
$$= ₹\ 480$$

If the C.I. compounded half-yearly, then

$$r = \frac{12}{2} = 6\% \text{ and}$$
$$n = 1 \times 2 = 2$$
$$\text{C.I.} = P\left[\left(1 + \frac{r}{100}\right)^n - 1\right]$$
$$= 4000\left[\left(1 + \frac{6}{100}\right)^2 - 1\right]$$
$$= 4000\left[\left(\frac{106}{100}\right)^2 - 1\right]$$
$$= 4000\left[\frac{106^2 - 100^2}{100^2}\right]$$
$$= \frac{400\,(106 + 100)\,(106 - 100)}{100 \times 100}$$
$$= \frac{4000 \times 206 \times 6}{100 \times 100}$$
$$= ₹\ 494.4$$

$\therefore$ Required difference = 494.4 – 480 = ₹ 14.4

61. (1) $\frac{7x - [3(2x - 3)]}{2} = \frac{1}{2}$

$$\frac{14x - (6x - 9)}{2} = \frac{1}{2}$$
$$14x - 6x + 9 = 1$$
$$8x = -8$$
$$\therefore \quad x = \frac{-8}{8} = -1$$

62. (3) $a + b = 4$ and $ab = 3$

$$(a + b)^2 = a^2 + b^2 + 2ab$$
$$(4)^2 = a^2 + b^2 + 2 \times 3$$
$$16 = a^2 + b^2 + 6$$
$$\text{or, } a^2 + b^2 = 16 - 6$$
$$\text{or, } a^2 + b^2 = 10$$
$$\therefore \quad a^3 + b^3 = (a + b)\,(a^2 + b^2 - ab)$$
$$= (4)\,(10 - 3)$$
$$= 4 \times 7 = 28$$

63. (1) Fraction = $\frac{x}{y}$

According to question,

$$\frac{x}{y} + 7 \times \frac{y}{x} = \frac{11}{2}$$
$$\frac{x^2 + 7y^2}{xy} = \frac{11}{2}$$
$$2x^2 + 14y^2 = 11xy$$
$$2x^2 - 11xy + 14y^2 = 0$$
$$2x^2 - 4xy - 7xy + 14y^2 = 0$$
$$2x(x - 2y) - 7y\,(x - 2y) = 0$$
$$(x - 2y)\,(2x - 7y) = 0$$
$$\therefore \quad \frac{x}{y} = \frac{2}{1}, \frac{7}{2}$$

64. (4) First term = a and common difference = d, of an A.P.

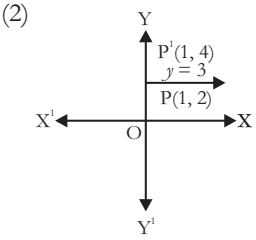
Then,

$$A_3 = a + (3 - 1)d$$
$$-8 = a + 2d \quad \text{... (i)}$$
$$A_9 = a + (9 - 1)d$$
$$10 = a + 8d \quad \text{... (ii)}$$

On solving equations (i) and (ii),

$$a = -14 \text{ and } d = 3$$
$$\therefore \quad A_{16} = a + (16 - 1)d$$
$$= -14 + (15) \times 3$$
$$= -14 + 45 = 31$$

65. (2)

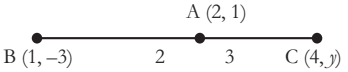


Point P (1, 2) lies in the first quadrant.

$y = 3$ is parallel to x-axis.

Reflection with respect to it is (1, 2) which is P^1 (1, 4) with respect to x-axis.

66. (4)



$$m : n = 2 : 3$$

y-co-ordinate of point A

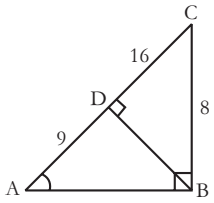
$$= \left(\frac{my_2 + ny_1}{m + n}\right)$$
$$1 = \frac{2 \times y + 3 \times (-3)}{2 + 3}$$
$$5 = 2y - 9$$
$$\text{or, } 5 + 9 = 2y$$
$$\text{or, } 14 = 2y$$
$$\therefore \quad y = 7$$

67. (3) At x-axis y co-ordinate is 0. putting $y = 0$ in the given equation,

$$2x + 5y = -6$$
$$2x + 0 = -6$$
$$2x = -6$$
$$x = -\frac{6}{2} = -3$$

$\therefore$ Required point = $(x, y) = (-3, 0)$

68. (4)



In ΔABC,

$BD^2 = AD \times DC$

$BD^2 = 9 \times 16$

$BD = \sqrt{144}$

$BD = 12$ cm

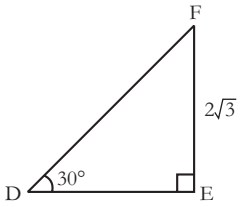
69. (1) $\tan 45° + \frac{4}{\sqrt{3}} \sec 60°$

$= 1 + \frac{4}{\sqrt{3}} \times 2$

$= 1 + \frac{8}{\sqrt{3}} = \frac{\sqrt{3} + 8}{\sqrt{3}}$

70. (3) In ΔDEF,

$\angle D = 30°$, $EF = 2\sqrt{3}$ cm

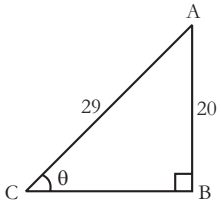


$\tan 30° = \frac{FE}{DE}$

$\frac{1}{\sqrt{3}} = \frac{1\sqrt{3}}{DE}$

$\therefore$ $DE = 6$ cm

71. (2)



In ΔABC,

$BC^2 = AC^2 - BA^2$

$BC^2 = 29^2 - 20^2$

$BC^2 = (29 + 20)(29 - 20)$

$BC^2 = 49 \times 9$

$BC = 7 \times 3 = 21$

$\therefore$ $\cos\theta = \frac{BC}{AC} = \frac{21}{29}$

72. (1) Company has marked loss in year 2013.

73. (2) Cumulative profit earned by the company

$= 20 + 30 + (-10) + 5 + 15 + 10$

$= ₹ 70$

74. (3) Profit in 2012 = ₹ 30 lakh

Profit in 2011 = ₹ 20 lakh

$\therefore$ Requirement percentage

$= \frac{30 - 20}{20} \times 100$

$= \frac{10}{20} \times 100 = 50\%$

75. (3) Required reserves

$= 50 - (30 - 10 + 5 + 15)$

$= 150 - 40 = ₹ 110$

PART-IV (ENGLISH LANGUAGE)

76. (2) In the given sentence, part (2) has an error. To correct the sentence use 'below' in place of 'down'.

77. (2) In the given sentence, part (2) has an error. To correct the sentence use 'outside' in place of 'out'.

78. (3) Like intelligence quotient (IQ) and emotional quotient (EQ), there is fun quotient (FQ).

Fun quotient: the amount of time you spend doing things that are light-hearted or fun.

79. (4) **Flock**

- A flock of sheep.
- A shoal of fish.
- A block of apartments.

80. (2) **Facsimile/Replica (Noun):** copy; duplicate; carbon copy.

Sentence → A facsimile of the manuscript.

81. (3) **Chauvinism/Zealotry (Noun):** excessive patriotism; blind partiotism; bigotry.

Sentence → He has a tendency towards chauvinism.

82. (3) Opposite of Melody is:

Cacophony (Noun): din; racket; noise.

Sentence → A cacophony of deafening alarm bells.

83. (3) Opposite of Diffident is:

Aggressive (Adjective): hostile; belligerent; bellicose.

Sentence → Ram is very un-cooperative and aggressive.

84. (2) **To be involved in a large and varied number of activities or enterprises**

Sentence → Raja very much likes to have a finger in every pie.

85. (2) **To make a decision; decide**

Sentence → My brother's daughter made up her mind to pursue IAS examination.

86. (3) For improvement of sentence use 'have done' in place of 'have doing'.

87. (1) For improvement of sentence use 'was being' in place of 'to be'.

88. (1) Best substitute of the sentence is

Travesty (Noun): Something that fails to represent the values and qualities that it is intended to represent, in a way that a shocking or offensive.

Sentence → This trial has proved to be a travesty of justice.

89. (1) Best substitute of the sentence is

Yearning (Noun): To wish very strongly.

Sentence → He spoke of his yearning for another child.

90. (1) Correctly spelt word → Perverted

91. (4) Correctly spelt word → Blandness

92. (4) Logical order of the sentences to form a coherent paragraph → YXZ

93. (3) Logical order of the sentences to form a coherent paragraph → YXZ

94. (3) Passive/Active Voice

The students questions are always answered by the tutor. It is active voice of simple present tense.

95. (3) Direct/Indirect Speech

Mother asked Pritam if he would tell her what it meant.

It is direct speech of an interrogative sentence.

96. (1) Prebiotics are dietary fibres found naturally in foods.

97. (1) Nonrapid-eye-movement (NREM).

98. (2) Metabolic by-products released when good bacteria digest dietary fibres.

99. (3) Sleep wake cycles be monitored by using electroencephalogram EEG.

100. (3) Chow is a rat food.

❑❑❑

10 SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 16 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Sheep : Lamb : : Cow : ?
(1) Kitten (2) Cub
(3) Calf (4) Caterpillar

2. PRAG : QTDK: : STOP : ?
(1) LMNP (2) BDFE
(3) TVRT (4) QSTG

3. 562 : 30 : : 663 : ?
(1) 44 (2) 49
(3) 54 (4) 58

Directions (4–6): In the following questions, find the odd word/letter/number pair from the given alternatives.

4. (1) Cricket (2) Carrom
(3) Table Tennis (4) Chess

5. (1) IMX (2) DHS
(3) GWK (4) KOZ

6. (1) 122 – 1331 (2) 173 – 2197
(3) 197 – 2744 (4) 290 – 4913

7. Arrange the given words in the sequence in which they occur in the dictionary.
1. Xenons 2. Xylyls
3. Xanthic 4. Xenians
5. Xyst
(1) 34125 (2) 34521
(3) 43251 (4) 51342

Directions (8–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

8. LOQ, SVX, ZCE, ?
(1) GJL (2) GLJ
(3) GTL (4) JLG

9. 13, 27, 56, 115, ?
(1) 224 (2) 231
(3) 233 (4) 234

10. Sumitra remembers that her mother's birthday is after 13th February but before 16th February but her brother remembers that his mother's birthday is after 14th February but before 17th February. On which date Sumitra's mother's birthday will be celebrated?
(1) 13th February
(2) 14th February
(3) 15th February
(4) 17th February

11. There are five energy drinks– Red, Moto, Energy, Lion and Bull containing different range of sugar content. Moto having sugar content more than all other drinks. Energy having the sugar content only more than the Lion. Bull is not having sugar content more than the Red. Which of the following drink having the second most sugar content?
(1) Bull (2) Energy
(3) Red (4) Moto

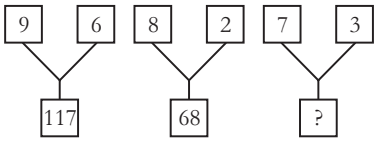
12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
CALCULATING
(1) GAIN (2) TANING
(3) TAIL (4) CULT

13. In a certain code language, "WILDHORN" is written as "1133" and "RAPTURE" is written as "1089". How is "PORTLOUIS" written in that code language?
(1) 1395 (2) 1485
(3) 1584 (4) 1595

14. If "A" denotes "subtracted from", "B" denotes "added to", "C" denotes "divided by", "D" denotes "multiplied by", then which of the following statement is correct?
(1) 3 A 12 B 16 D 17 C 1 = 163
(2) 5 C 7 A 9 D 8 B 2 = 294
(3) 13 C 13 A 13 B 13 D 13 = 157
(4) 18 C 16 D 49 A 27 B 9 = 200

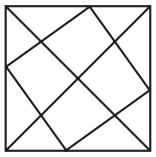
15. If 9 * 2 * 5 = 23 and 1 * 4 * 8 = 29, then 1 * 6 * 3 = ?
(1) 19 (2) 21
(3) 31 (4) 39

16. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.



(1) 48 (2) 52
(3) 55 (4) 58

17. How many triangles are there in the given figure?



(1) 20 (2) 23
(3) 24 (4) 24

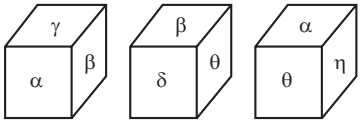
18. In the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which

of the given conclusion logically follows the given statements?

Statements:
All LED are bulb.
Some bulbs are not tube light.

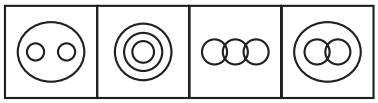
Conclusions:
I. Some tube lights are LED.
II. All LED are tube lights.
(1) Only conclusion I follows
(2) Only conclusion II follows
(3) Neither conclusion I nor II follows
(4) Both conclusions follow

19. Three positions of a cube are shown below. What will come opposite to face containing 'α'?



(1) β (2) δ
(3) η (4) θ

20. Identify the diagram that best represents the relationship among the given classes.
Pet animals, Dog, Cat

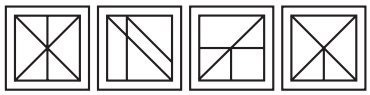


(1) (2) (3) (4)

21. Which answer figure will complete the pattern in the question figure?

Question Figure

Answer Figures

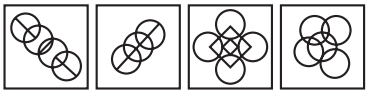


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

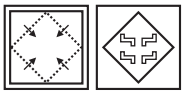
Answer Figures



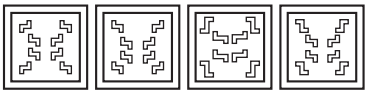
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figures



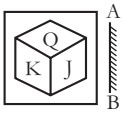
Answer Figures



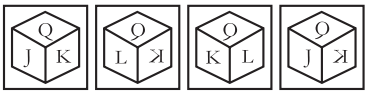
(1) (2) (3) (4)

24. If a mirror is placed on the line AB, then which of the answer figure is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'Z' can be represented by 87, 99, etc. and 'T' can be represented by 69, 95, etc. Similarly, you have to identify the set for the word 'MAZE'.

Matrix-I

	0	1	2	3	4
0	M	O	G	A	C
1	A	C	M	O	G
2	O	G	A	C	M
3	C	M	O	G	A
4	G	A	C	M	O

Matrix-II

	5	6	7	8	9
5	J	Z	T	E	U
6	E	U	J	Z	T
7	Z	T	E	U	J
8	U	J	Z	T	E
9	T	E	U	J	Z

(1) 00, 41, 99, 96
(2) 12, 04, 56, 58
(3) 24, 22, 88, 65
(4) 43, 10, 69, 77

PART-II (GENERAL AWARENESS)

26. What does indifference curve represent?
(1) Levels of Income and Capital
(2) Satisfaction derived from two goods
(3) Income from two businesses
(4) Relationship between expenditure and savings

27. Match the following.

Revolution	Leader
1. Green Revolution	a. Durgesh Patel
2. White Revolution	b. M.S. Swaminathan
3. Pink Revolution	c. Verghese Kurien

(1) 1 – c, 2 – b, 3 – a
(2) 1 – b, 2 – c, 3 – a

(3) 1 – a, 2 – b, 3 – c
(4) 1 – a, 2 – c, 3 – b

28. India has taken the concept of 'Judicial Review' from which country's constitution?
(1) United States
(2) United Kingdom
(3) Canada
(4) Ireland

29. How many times a person can be elected as the President of India?
(1) One time (2) Two times
(3) Three times (4) No bar

30. Who shot dead John Saunders on 17th December, 1927?
(1) Bhagat Singh
(2) Mangal Panday
(3) Sukhdev
(4) Bipin Chandra Pal Singh

31. Sardar Vallabhbhai Patel was the leader of ..... .
(1) Bhoodan Movement
(2) Rowlatt Satyagraha
(3) Bardoli Satyagraha
(4) Swadeshi Movement

32. Which type of forests majorly comprises of lichens and mosses?
(1) Taiga forests
(2) Tundra forests
(3) Temperate mixed forests
(4) Tropical ever green forests

33. Which of the following has maximum diurnal temperature difference?
(1) Desert (2) Mountains
(3) Plateau (4) Ocean

34. Night Blindness is caused by deficiency of which of the following Vitamin?
(1) Vitamin B (2) Vitamin C
(3) Vitamin K (4) Vitamin A

35. The right portion of human heart receives ..... blood.
(1) pure (2) impure
(3) mixed (4) None of these

36. Which of the following is the largest gland in human body?
(1) Thyroid (2) Liver
(3) Kidney (4) Pancreas

37. On which principle does the hydraulic lift works?
(1) Newton's law
(2) Pascal's law
(3) Archimedes's law
(4) Joule's law

38. At what temperature (in degree celsius), the numerical values on Celsius and Fahrenheit scales become equal?
(1) –40 (2) 40
(3) 273 (4) –273

39. In MICR, what does 'I' stands for?
(1) Interactive (2) Information
(3) Ink (4) Instruction

40. What is the process of conversion of solid state directly to gaseous state called?
(1) Evaporation (2) Condensation
(3) Sublimation (4) Distillation

41. What are the main components of Bronze Alloy?
(1) Copper and Zinc
(2) Copper and Tin
(3) Zinc and Nickel
(4) Aluminium and Nickel

42. Which of the following causes fly ash?
(1) Hydroelectric Power Station
(2) Coal Combustion Power Plant
(3) Nuclear Power Plant
(4) Tidal Power Plant

43. "Dulari Kanya", a scheme to bring down infant mortality in the state is launched by which Indian State?
(1) Arunachal Pradesh
(2) Rajasthan
(3) Uttar Pradesh
(4) Madhya Pradesh

44. Who developed the theory of relativity?
(1) Issac Newton
(2) Charles Darwin
(3) Marie Curie
(4) Albert Einstein

45. 'Queensbury rules' is code of rules that directly influences which of the following sport?
(1) Tennis (2) Boxing
(3) Polo (4) Billiards

46. Who amidst the following is a distinguished painter?
(1) Uday Shankar
(2) Sonal Mansingh
(3) Amrita Shergill
(4) Yamini Kirshnamurthy

47. Who among the following was awarded with Padma Shri 2017 in the field of 'Sports-Hockey'?
(1) Sardar Singh
(2) P. R. Shreejesh
(3) Ramandeep Singh
(4) Yuvraj Walmiki

48. "Hema Malini : Beyond the Dream Girl" is authored by which author?
(1) Meena Iyer
(2) Hema Malini
(3) Ram Kamal Mukherjee
(4) Vijay Kumar

49. A 7500 mile direct rail link was launched on 10 April, 2017 between China and ..... .
(1) Pakistan (2) Kazakhstan
(3) Great Britain (4) France

50. 19th SAARC Summit was planned to be held in November 2016 but it got postponed. Which country was its host?
(1) Nepal (2) Bhutan
(3) India (4) Pakistan

PART-III
(QUANTITATIVE APTITUDE)

51. Product of three consecutive odd numbers is 1287. What is the largest of the three numbers?
(1) 9 (2) 11
(3) 13 (4) 17

52. 45 men or 60 boys can do a piece of work in 20 days. How many days will 15 men and 20 boys take to complete the work?
(1) 23 days (2) 45 days
(3) 30 days (4) 25 days

53. How many spherical balls of radius 1 cm can be made by melting a hemisphere of radius 6 cm?
(1) 112 (2) 108
(3) 116 (4) 104

54. The marked price of a shirt is ₹ 1,280/-. If the shirt is being sold for ₹ 900/-, then what is the discount percentage?

(1) 31.31% (2) 25.57%
(3) 29.68% (4) 34.36%

55. The ratio of numbers of cans of orange, pineapple and mixed fruit juicies kept in a store is 8 : 9 : 15. If the store sells 25%, 33.33% and 20% of orange, pineapple and mixed fruit juices cans respectively, then what is the ratio of number of cans of these juices in the remaining stock?
(1) 1 : 1 : 2 (2) 6 : 6 : 13
(3) 12 : 15 : 19 (4) 4 : 9 : 13

56. The ratio of number of boys and girls in a class is 2 : 3. The average weight of boys and girls in the class is 18 kg and 21 kg respectively. What is the average weight (in kgs) of all the boys and girls together?
(1) $\frac{99}{5}$ kg (2) $\frac{101}{5}$ kg
(3) $\frac{109}{5}$ kg (4) $\frac{96}{5}$ kg

57. A milk merchant buys 50 litres of milk at the rate of ₹ 40 per litre and mixes 5 litres of water in it. If he sells this mixture at the rate of ₹ 42 per litre, then what is the profit percentage for the dealer?
(1) 17.2% (2) 14.4%
(3) 16.6% (4) 15.5%

58. If A is 6 times more than B, then by what percentage is B is less than A?
(1) 64.82% (2) 83.33%
(3) 28.56% (4) 85.71%

59. A runner starts running from a point at 6:00 am with a speed of 8 km/h. Another racer starts from the same point at 8:30 am in the same direction with a speed of 10 km/h. At what time of the day (in p.m.) will the second racer will overtake the other runner?
(1) 8:00 (2) 4:00
(3) 6:30 (4) 5:30

60. A sum amounts to ₹ 7,727.104 at the rate of 12% per annum compounded annually after three years. What is the value of principal (in ₹)?
(1) ₹ 5,000/- (2) ₹ 5,200/-
(3) ₹ 5,350/- (4) ₹ 5,500/-

61. When $\left[x+\left(\frac{1}{x}\right)\right] = 5$, then what is the value of $\left[x-\left(\frac{1}{x}\right)\right]$?
(1) 11 (2) $\pm\sqrt{22}$
(3) 21 (4) $\pm\sqrt{21}$

62. If $x = \frac{(\sqrt{2}+1)}{(\sqrt{2}-1)}$, then what is the value of $\frac{(x^5+x^4+x^2+x)}{x^3}$?
(1) 40 (2) 37.5
(3) 38 (4) $20\sqrt{2}$

63. If $x = 5 - 2\sqrt{6}$, then what is the value of $\sqrt{x} + \left(\frac{1}{\sqrt{x}}\right)$?
(1) 5 (2) 2
(3) $2\sqrt{3}$ (4) $2\sqrt{2}$

64. If $27^x + 27^{\left[x-\left(\frac{1}{3}\right)\right]} = 972$, then what is the value of x?
(1) 2 (2) 3
(3) 4 (4) 5

65. The inradius of a equilateral triangle is 10 cm. What is the circum-radius (in cm) of the same triangle?
(1) 5 cm (2) $10\sqrt{3}$ cm
(3) 20 cm (4) $20\sqrt{3}$ cm

66. The point of intersection of all the angle bisector of a triangle is ..... of the triangle.
(1) incenter (2) circumcenter
(3) centroid (4) orthocenter

67. ABC is an equilateral triangle and P is the orthocenter of the triangle, then what is the value (in degrees) of BPC?
(1) 90° (2) 120°
(3) 135° (4) 145°

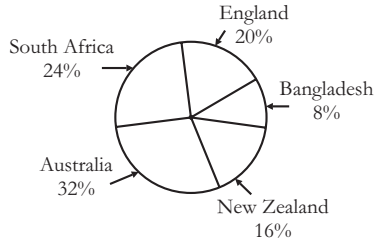
68. In a ΔABC, AD is angle bisector of ∠A and AB : AC = 3 : 4. If the area of ΔABC is 350 cm^2, then what is the area (in cm^2) of ΔABD?
(1) 150 cm^2 (2) 200 cm^2
(3) 210 cm^2 (4) 240 cm^2

69. A boat is sailing towards a lighthouse of height $20\sqrt{3}$ m at a certain speed. The angle of elevation of the top of the lighthouse changes from 30° to 60° in 10 seconds. What is the time taken (in seconds) by the boat to reach the lighthouse from its initial position?
(1) 10 sec (2) 15 sec
(3) 20 sec (4) 60 sec

70. What is the value of $\left[\frac{\sec\theta}{(\sec\theta-1)}\right] + \left[\frac{\sec\theta}{(\sec\theta+1)}\right]$?
(1) $2\sin^2\theta$ (2) $2(1+\tan^2\theta)$
(3) $2\,\text{cosec}^2\theta$ (4) $\sin^2\theta$

71. If $\text{cosec}\,\theta = \frac{1}{4x} + x$, then what is the value of $\text{cosec}\,\theta + \cot\theta$?
(1) $3x$ (2) x
(3) $4x$ (4) $2x$ or $\frac{1}{(2x)}$

Directions (72–75): The Pie chart given below shows the runs scored by Pujara against team of different countries.



72. The runs scored by Pujara against South Africa is more than runs scored against Bangladesh by what percentage?
(1) 100% (2) 150%
(3) 200% (4) 250%

73. If Pujara has scored 1875 runs in total, then what is the difference in runs scored by Pujara against South Africa and New Zealand?
(1) 150 (2) 175
(3) 200 (4) 250

74. What is the sectorial angle (in degrees) made by the runs scored against Australia in the given pie chart?
(1) 106.8° (2) 109.6°
(3) 112.4° (4) 115.2°

75. What should be the least number of runs that Pujara must have scored in total (runs can only be integers)?
(1) 25 (2) 225
(3) 375 (4) 625

PART-IV
(ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. I am vexed at him (1)/ for what all he has (2)/ done for him till date. (3)/ No error (4)

77. The Manager warned his team members (1)/ that if they persist in their (2)/ obstructionist attitude they would be punished. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. Both taciturn and ....., Daniel seldom spoke and never spent money.
(1) wary (2) cheap
(3) discreet (4) miserly

79. He was too ..... to make a statement before the Boss.
(1) shy (2) tired
(3) timid (4) coward

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Reiterate
(1) Abuse (2) Pretend
(3) Detest (4) Repeat

81. Nincompoop
(1) Wise (2) Fool
(3) Lover (4) Companion

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Pellucid
(1) Torpid (2) Explicit
(3) Murky (4) Limpid

83. Adamant
(1) Rigid (2) Flexible
(3) Fixed (4) Unshakable

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. To wrangle over an ass's shadow
(1) To waste money over trifles
(2) To punish a person severely for his arrogance
(3) To quarrel over trifles
(4) To keep away from extreme poverty

85. Make one's flesh Creep
(1) To confuse someone
(2) To flatter someone
(3) To abuse someone
(4) To frighten someone

Directions (86–87): Improve the **bold** part of the sentence.

86. Father **would have been appreciated** your efforts if you had informed him.
(1) would be appreciated
(2) would have appreciated
(3) should have been appreciated
(4) No improvement

87. Neha was **surprised by** her result.
(1) surprised to
(2) surprised from
(3) surprised at
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

88. Study of tumors
(1) Oenology (2) Oncology
(3) Phrenology (4) Upology

89. The highest point
(1) Tempest (2) Outpost
(3) Archive (4) Zenith

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Literary (2) Leakeage
(3) Laudable (4) Loafer

91. (1) Anasthetic (2) Obliterate
(3) Concurrence (4) Blithesome

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent pargraph.

92. P. Yet making loans to poor people is hardly a Poverty cure.
Q. Segmenting the industry, might be worth while if it allows more of the poor to get access to credit.
R. Multinational corporations could take the top microfinance institutions to the next level, and the remainder could take the responsibility of development groups and regional banks.
S. Property rights and the role of law matter too.
(1) PRQS (2) QRPS
(3) SPQR (4) RSPQ

93. P. But the scenario has quite changed now-a-days by allocating a special budget of funds for security.
Q. In the last ten years, budget towards the development of military forces is higher when compared to others.
R. India earlier days gave more importance to the development of industry and less importance to other departments.
S. This is because of the frightening increase in terrorism all around the world especially emerging after the 9/11 terror attack in U.S.
(1) PRQS (2) SPQR
(3) QSPR (4) RPSQ

94. In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
One should keep one's word.
(1) A word should be kept.

(2) A word should be keeping.
(3) One's word has to be kept.
(4) One's word should be kept by us.

95. In the following question, a sentence has been given in Direct/ Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
The old man said, "Thanks I shall never forget this kindness, Ankit."
(1) The old man applauded Ankit for his kindness and he shall never forget Ankit.
(2) The old man thanked Ankit and assured him that he would never forget his kindness.
(3) Ankit was being thanked by the old man for his kindness towards an old man.
(4) The old man said thank you to Ankit for his kindness.

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

National integration means ...**(96)**... all the people of the nation into a single whole. It is ...**(97)**... that bend together all people in one ...**(98)**... bond no matter what their religion, caste, language or history may be. It is a ...**(99)**... cementing force where by all kinds of people live ...**(100)**... peacefully and can identify themselves as a part and parcel of a nation.

96. (1) segregating (2) combining
(3) residing (4) complying

97. (1) sentiment (2) resources
(3) essentials (4) finances

98. (1) real (2) common
(3) nominal (4) similar

99. (1) weakening (2) natural
(3) strong (4) settled

100. (1) separately
(2) jointly
(3) happily
(4) together

Short Answers

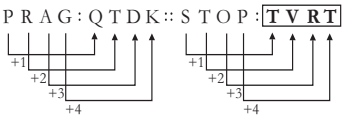
1. (3)	**2.** (3)	**3.** (3)	**4.** (1)	**5.** (3)	**6.** (2)	**7.** (1)	**8.** (1)	**9.** (4)	**10.** (3)
11. (3)	**12.** (2)	**13.** (4)	**14.** (3)	**15.** (1)	**16.** (4)	**17.** (1)	**18.** (3)	**19.** (2)	**20.** (3)
21. (2)	**22.** (2)	**23.** (4)	**24.** (2)	**25.** (1)	**26.** (2)	**27.** (2)	**28.** (1)	**29.** (4)	**30.** (1)
31. (3)	**32.** (2)	**33.** (1)	**34.** (4)	**35.** (2)	**36.** (2)	**37.** (2)	**38.** (1)	**39.** (3)	**40.** (3)
41. (2)	**42.** (2)	**43.** (1)	**44.** (4)	**45.** (2)	**46.** (3)	**47.** (2)	**48.** (2)	**49.** (3)	**50.** (4)
51. (3)	**52.** (3)	**53.** (2)	**54.** (3)	**55.** (1)	**56.** (1)	**57.** (4)	**58.** (4)	**59.** (3)	**60.** (4)
61. (4)	**62.** (1)	**63.** (3)	**64.** (1)	**65.** (3)	**66.** (1)	**67.** (2)	**68.** (1)	**69.** (2)	**70.** (3)
71. (4)	**72.** (3)	**73.** (1)	**74.** (4)	**75.** (1)	**76.** (1)	**77.** (2)	**78.** (4)	**79.** (3)	**80.** (4)
81. (2)	**82.** (3)	**83.** (2)	**84.** (3)	**85.** (4)	**86.** (2)	**87.** (3)	**88.** (2)	**89.** (4)	**90.** (2)
91. (1)	**92.** (2)	**93.** (4)	**94.** (1)	**95.** (2)	**96.** (2)	**97.** (1)	**98.** (2)	**99.** (3)	**100.** (4)

Hints & Solutions

Part-I
(General Intelligence & Reasoning)

1. (3) Baby of sheep is known as lamb. Similarly, baby of cow is known as calf.

2. (3) P R A G : Q T D K :: S T O P : **T V R T**



3. (3) As,

$$562 = \frac{5 \times 6 \times 2}{2} = \frac{60}{2}$$

$$= 30$$

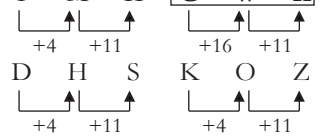
Similarly,

$$663 = \frac{6 \times 6 \times 3}{2} = \frac{108}{2}$$

$$= \mathbf{54}$$

4. (1) Except Cricket, all others are indoor games.

5. (3)



6. (2) $122 - 1331$, $\mathbf{173 - 2197}$

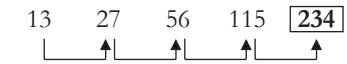
$11^2 + 1 \quad 11^3 \quad 13^2 + 4 \quad 13^3$

$197 - 2744$, $290 - 4913$

$14^2 + 1 \quad 14^3 \quad 17^2 + 1 \quad 17^3$

7. (1) Arrangement of the words as per English dictionary:
Xanthic (3) → Xenians (4) → Xenons (1) → Xylyl (2) → Xyst (5)

8. (1) L O Q S V X Z C E **G J L**



9. (4) 13 27 56 115 **234**

×2+1 ×2+2 ×2+3 ×2+4

10. (3) According to Sumitra,
Mother's birthday
$= 14^{th}$ or 15^{th} February
According to Sumitra's brother,
Mother's birthday
$= 15^{th}$ or 16^{th} February
Common date = 15^{th} February

11. (3) Moto > **Red** > Bull > Energy > Lion.

12. (2) The word 'TANING' cannot be formed using the letters of the given word because the word 'CALCULATING' does not have two 'N'.

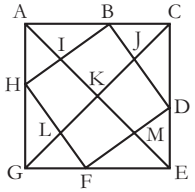
13. (4) As,
WILDHORN → (23 + 9 + 12 + 4 + 8 + 15 + 18 + 14) × 11
= 103 × 11 = 1595
PAAPTURE → (18 + 1 + 16 + 20 + 21 + 18 + 5) × 11
= 99 × 11 = 1089
Similarly,
PORTLOUIS → (16 + 15 + 18 + 20 + 12 + 15 + 21 + 9 + 19) × 11
= 145 × 11 = **1595**

14. (3) From option (3),
13 C 13 A 14 B 13 D 13 = 157
13 ÷ 13 – 13 + 13 × 13 = 157
1 – 13 + 169 = 157
170 – 13 = 157
157 = 157

15. (1) 9 * 2 * 5 = 23
or, $529 \Rightarrow \sqrt{529} = 23$
1 * 4 * 8 = 29
or, $841 \Rightarrow \sqrt{841} = 29$
∴ 1 * 6 * 3 = ?
or, $361 \Rightarrow \sqrt{361} = 19$

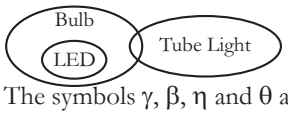
16. (4) As,
$9^2 + 6^2 = 81 + 36 = 117$
$8^2 + 2^2 = 64 + 4 = 68$
Similarly,
$7^2 + 3^2 = 49 + 9 =$ **58**

17. (1)



Triangles = AHI, BIA, BAH, CBJ, CJD, DCB, DEM, DEF, AEF, LGF, HGL, HGF, KCA, KEC, KGE, KAG, AGE, ACE, ECG, CAG

18. (3)



19. (2) The symbols γ, β, η and θ are on the faces adjacent to α.
∴ δ lies opposite 'α'.

20. (3)

21. (2)

22. (2)

23. (4)

24. (2)

25. (1) M → **00**, 31, 12, 43, 24
A → 10, **41**, 22, 03, 34
Z → 75, 56, 87, 68, **99**
E → 65, **96**, 77, 58, 89
For given word MAZE, group of letters can be represented by the numbers → 00, 41, 99, 96.

PART-II
(GENERAL AWARENESS)

26. (2) **Indifference Curve:** It is a graph showing combination of two goods that give the consumer equal satisfaction and utility.

27. (2) **Green Revolution –** M.S. Swaminathan
White Revolution – Verghese Kurien
Pink Revolution – Durgesh Patel

28. (1) The Indian Constitution adopted the Judicial Review on lines of U.S. Constitution.

29. (4) Article 57 of the Constitution, a President is eligible for re-election to that office and there is no bar on number of times.

30. (1) On 17 December, 1927, the revolutionaries Bhagat Singh and Rajguru shot and killed assistant superintendent of police John Saunders.

31. (3) **Bardoli Satyagraha (1928):** It was a movement in the independence struggle led by Sardar Vallabhbhai Patel for the farmers of Bardoli against the unjust raising of taxes.

32. (2) One of the most successful types of tundra vegetation is moss. Mosses are quite tough despite their small size. Over 100 species of moss grow in the tundra. Lichens are abundant in the tundra regions.

33. (1) Diurnal temperature variations are greatest very near the earth's surface. High desert areas typically have the greatest diurnal temperature variations. Low lying, humid areas typically have the least.

34. (4) **Night Blindness:** It is caused by the deficiency of Vitamin A.

35. (2) The heart receives blood low in oxygen from the systemic circulation, which enters the right atrium from the superior and inferior venae cavae and passes to the right ventricle.

36. (2) **Liver:** The largest gland found in the human body. The liver has many functions and plays a large role in human metabolism and digestion.

37. (2) **Pascal's Law** is a principle in fluid mechanics that states that: pressure exerted anywhere in a confined incompressible fluid is transmitted equally in all directions throughout the fluid such that the pressure ratio (initial difference) remains the same. An important application of Pascal's law is the hydraulic lift used to lift heavy objects.

38. (1) Fahrenheit and Celsius thermometer readings are equal on = –40 degrees.

39. (3) **Magnetic Ink Character Recognition (MICR):** It is a 9-digit code that uniquely identifies a bank and a branch participating in an Electronic Clearing System (ECS). The first 3 digit of the code represents the city code, the

middle ones represent the bank code and last 3 represents the branch code.

40. (3) Sublimation is conversion of a substance from the solid to the gaseous state without its becoming liquid.

Example: The vaporisation of frozen carbon dioxide (dry ice) at ordinary atmospheric pressure and temperature.

41. (2) Bronze alloy traditionally is composed of copper and tin.

42. (2) Fly ash is a byproduct from burning pulverised coal in electric power generating plants.

43. (1) **Dulari Kanya Yojana:** Arunachal Pradesh has launched a special scheme on the occasion of 68th Republic Day to bring down the infant mortality. The scheme will track all the pregnant mothers to provide them better care for safe and secured delivery.

44. (4) Albert Einstein, in his theory of special relativity, determined that the laws of physics are the same for all non-accelerating observers and he showed that the speed of light within a vacuum is the same no matter the speed at which an observer travels.

45. (2) **Marquess of Queensberry Rules:** Generally accepted rules in the sport of boxing.

46. (3) **Amrita Shergill:** She was an eminent Hungarian – Indian painter and was influenced by the Mughal as well as the Ajanta paintings.

47. (2) Senior men's hockey team captain and goalkeeper PR Sreejesh was awarded Padma Shri award 2017.

48. (2) 'Beyond the Dream Girl' a biography is written by Hema Malini.

49. (3) The first freight train linking China directly to the United Kingdom was launched on 10 April, 2017 becoming the world's second-longest rail route.

50. (4) The SAARC Summit cancelled after four nations Afghanistan, Bhutan, Bangladesh and India requested to postpone the summit in Islamabad scheduled for November 9 and 10, 2016, following escalation of tension between India and Pakistan.

PART-III (QUANTITATIVE APTITUDE)

51. (3) Three consecutive odd numbers $= x, x + 2$ and $x + 4$,

According to question,

$$x(x+2)(x+4) = 1287$$
$$= 9 \times 11 \times 13$$
$$x(x+2)(x+4) = 9(9+2)(9+4)$$
$$x = 9$$

Largest of the three numbers $= 9 + 4 = 13$

52. (3) 45 Men = 60 Boys

3 Men = 4 Boys

$$15 \text{ men} + 20 \text{ Boys} = 15 \times \frac{4}{3} \text{ Boys} + 20 \text{ Boys} = 40 \text{ Boys}$$

According to question,

$$60 \text{ Boys} \times 20 = 40 \text{ Boys} \times x$$
$$x = \frac{60 \times 20}{40}$$
$$= 30 \text{ days}$$

53. (2) Required number of spherical balls

$$= \frac{\frac{2}{3}\pi r_1^3}{\frac{4}{3}\pi r_2^3} = \frac{1}{2}\left[\frac{r_1}{r_2}\right]^3$$
$$= \frac{1}{2}\left[\frac{6}{1}\right]^3 = \frac{216}{2}$$
$$= 108$$

54. (3) Discount percentage $= x\%$

According to question,

$$1280 \times \frac{(100-x)}{100} = 900$$
$$12800 - 128x = 9000$$
$$128x = 3800$$
$$x = \frac{3800}{128}$$
$$= 29.68\%$$

55. (1) Required average $= 8 \times \frac{75}{100}$:

$$9 \times \frac{200}{3} \times \frac{1}{100} : 15 \times \frac{80}{100}$$
$$= 8 \times 75 : 3 \times 200 : 15 \times 80$$
$$= 8 \times 3 : 3 \times 8 : 3 \times 16$$
$$= 1 : 1 : 2$$

56. (1) Required average

$$= \frac{2 \times 18 + 3 \times 21}{2 + 3}$$
$$= \frac{36 + 63}{5} = \frac{99}{5} \text{ kg}$$

57. (4) Cost price $= 50 \times 40 = 2000$

Selling price $= (50 + 5) \times 42$
$= 55 \times 42$

Profit percentage

$$= \frac{2310 - 2000}{2000} \times 100$$
$$= \frac{310}{20} = 15.5\%$$

58. (4) B $= x$

$$A = 6x + x = 7x$$

B is less than A $= \frac{7x - x}{7x} \times 100$

$$= \frac{6 \times 100}{7} = 85.71\%$$

59. (3) The distance covered by the first runner in 8:30 – 6:00 = 2:30 hours.

$$= \frac{5}{2} \times 8 = 20 \text{ km}$$

Required time $= \frac{20}{10 - 8} = \frac{20}{2}$

$= 10$ hours

Hence, at 8:30 + 10 = 6:30 (in pm), the second runner will overtake the first runner.

60. (4) Principal = P

According to question,

$$P\left[1 + \frac{12}{100}\right]^3 = 7727.104$$
$$P\left[\frac{28}{25}\right]^3 = 7727.104$$
$$P = \frac{7727.104 \times 15625}{21952}$$
$$P = 5500$$

61. (4) $x + \frac{1}{x} = 5$

$$x^2 + 1 = 5x$$
$$x^2 - 5x + 1 = 0$$
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-5 \pm \sqrt{25 - 4}}{2 \times 1}$$
$$x = \frac{5 \pm \sqrt{21}}{2}$$
$$x - \frac{1}{x} = \frac{5 + \sqrt{21}}{2} - \frac{2}{5 + \sqrt{21}}$$

$$= \frac{5+\sqrt{21}}{2} - \frac{2(5-\sqrt{21})}{(5+\sqrt{21})(5-\sqrt{21})}$$

$$= \frac{5+\sqrt{21}}{2} - \frac{10+2\sqrt{21}}{25-21}$$

$$= \frac{10+2\sqrt{21}-10+2\sqrt{21}}{4}$$

$$= \frac{4\sqrt{21}}{4} = \sqrt{21}$$

$$x - \frac{1}{x} = \frac{5-\sqrt{21}}{2} - \frac{2}{5-\sqrt{21}}$$

$$= \frac{5-\sqrt{21}}{2} - \frac{2}{5-\sqrt{21}} \times \frac{5+\sqrt{21}}{5+\sqrt{21}}$$

$$= \frac{5-\sqrt{21}}{2} - \frac{10-2\sqrt{21}}{4}$$

$$= \frac{10-2\sqrt{21}-10-2\sqrt{21}}{4}$$

$$= -\frac{4\sqrt{21}}{4} = -\sqrt{21}$$

$$\therefore\ x - \frac{1}{x} = \pm\sqrt{21}$$

62. (1) $x = \dfrac{\sqrt{2}+1}{\sqrt{2}-1}$

$$= \frac{\sqrt{2}+1}{\sqrt{2}-1} \times \frac{\sqrt{2}+1}{\sqrt{2}+1}$$

$$x = \frac{2+1+2\sqrt{2}}{2-1} = 3+2\sqrt{2}$$

$$\frac{1}{x} = \frac{1}{3+2\sqrt{2}}$$

$$= \frac{1}{3+2\sqrt{2}} \times \frac{3-2\sqrt{2}}{3-2\sqrt{2}}$$

$$\frac{1}{x} = \frac{3-2\sqrt{2}}{9-8} = 3+2\sqrt{2}$$

$$x + \frac{1}{x} = 3+2\sqrt{2}+3-2\sqrt{2}$$

$$x + \frac{1}{x} = 6$$

$$x^2 + \frac{1}{x^2} + 2 = 36$$

$$x^2 + \frac{1}{x^2} = 34$$

$$\frac{x^5+x^4+x^2+x}{x^3} = x^2 + x + \frac{1}{x} + \frac{1}{x^2}$$

$$= x^2 + \frac{1}{x^2} + x + \frac{1}{x}$$

$$= 34 + 6$$

$$= 40$$

63. (3) $x = 5-2\sqrt{6} \Rightarrow \sqrt{x} = \sqrt{5-2\sqrt{6}}$

$$\sqrt{x} = \sqrt{(\sqrt{3}-\sqrt{2})^2}$$

$$\sqrt{x} = \sqrt{3} - \sqrt{2}$$

$$\frac{1}{\sqrt{x}} = \frac{1}{\sqrt{3}-\sqrt{2}}$$

$$= \sqrt{3} + \sqrt{2}$$

$$\sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{3} - \sqrt{2} + \sqrt{3} + \sqrt{2}$$

$$\sqrt{x} + \frac{1}{\sqrt{x}} = 2\sqrt{3}$$

64. (1) $27^x + 27^{\left(x-\frac{1}{3}\right)} = 972$

or, $27^x\left[1 + (27)^{-\frac{1}{3}}\right] = 972$

or, $27^x\left[1+\frac{1}{3}\right] = 972$

or, $27^x\left[\frac{4}{3}\right] = 972$

or, $3^{3x}.\ 3^{-1} = 343$

or, $3^{3x-1} = (3)^5$

or, $3x - 1 = 5$

$3x = 6$

$\therefore\ x = 2$

65. (3) The inradius of equilateral triangle $= \dfrac{a}{2\sqrt{3}}$

$$10 = \frac{a}{2\sqrt{3}}$$

$$a = 20\sqrt{3} \text{ cm}$$

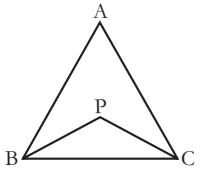
The circum-radius of equilateral triangle $= \dfrac{a}{\sqrt{3}}$

$$= \frac{20\sqrt{3}}{\sqrt{3}} = 20 \text{ cm}$$

66. (1) The point of intersection of angle bisectors of triangle is called incenter.

67. (2) $\angle A = \angle B = \angle C = 60°$

$\because$ In equilateral triangle, The orthocenter, circumcenter, incenter and centroid all are the same point.



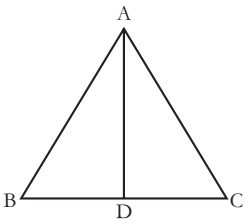
$$\therefore\ \angle CBP = \frac{\angle ABC}{2} = \frac{60°}{2} = 30°$$

$$\angle BCP = \frac{\angle ABC}{2} = \frac{60°}{2} = 30°$$

$$\therefore\ \angle BPC = 180° - 30° - 30°$$

$$\angle BPC = 120°$$

68. (1)



AB : AC = 3 : 4

Area of $\Delta ABC = 350 \text{ cm}^2$

$$\therefore\ \text{Area of } \Delta ABD = \frac{350 \times 3}{3+4}$$

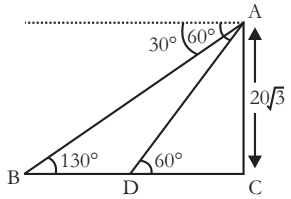
$$= \frac{350 \times 3}{7}$$

$$= 150 \text{ sq. cm.}$$

69. (2) In ΔADC,

$$\tan 60° = \frac{20\sqrt{3}}{DC}$$

$$\sqrt{3} = \frac{20\sqrt{3}}{DC}$$



DC = 20 m

In ΔABC,

$$\tan 30° = \frac{20\sqrt{3}}{BD + DC}$$

$$\frac{1}{\sqrt{3}} = \frac{20\sqrt{3}}{BD + 20}$$

$$BD + 20 = 60$$

$$BD = 40 \text{ m}$$

$$\text{Speed} = \frac{40}{10} = 4 \text{ m/sec}$$

$$\text{Required time} = \frac{BD + DC}{4}$$

$$= \frac{40+20}{4}$$

$$= \frac{60}{4} = 15 \text{ sec}$$

70. (3) $\dfrac{\sec\theta}{\sec\theta - 1} + \dfrac{\sec\theta}{\sec\theta + 1}$

$$= \sec\theta\left[\frac{1}{\sec\theta - 1} + \frac{1}{\sec\theta + 1}\right]$$

$= \sec\theta\left[\frac{\sec\theta + 1 + \sec\theta - 1}{\sec^2\theta - 1}\right]$

$= \sec\theta\left[\frac{2\sec\theta}{\tan^2\theta}\right]$

$= \frac{2\sec^2\theta}{\tan^2\theta} = \frac{2}{\cos^2\theta} \times \frac{\cos^2\theta}{\sin^2\theta}$

$= 2\,\text{cosec}^2\,\theta$

71. (4) $\text{cosec}\,\theta = \frac{1}{4x} + x = \frac{1 + 4x^2}{4x}$

$\text{cosec}\,\theta + \cot\theta = \text{cosec}\,\theta + \frac{\cos\theta}{\sin\theta}$

$= \text{cosec}\,\theta + \text{cosec}\,\theta.\cos\theta$

$= \text{cosec}\,\theta\,[1 + \cos\theta]$

$= \text{cosec}\,\theta\,[1 + \sqrt{1 - \sin^2\theta}]$

$= \text{cosec}\,\theta\left[1 + \sqrt{1 - \frac{1}{\text{cosec}^2\,\theta}}\right]$

$= \left[\frac{1 + 4x^2}{4x}\right]\left[1 + \sqrt{1 - \frac{1}{\left(\frac{1 + 4x^2}{4x}\right)^2}}\right]$

$= \left[\frac{1 + 4x^2}{4x}\right]\left[1 + \sqrt{1 - \frac{16x^2}{(1 + 4x^2)^2}}\right]$

$= \left[\frac{1 + 4x^2}{4x}\right]\left[1 + \sqrt{\frac{1 + 16x^2 - 8x^2 - 16x^2}{(1 + 4x^2)^2}}\right]$

$= \left[\frac{1 + 4x^2}{4x}\right]\left[1 + \sqrt{\frac{1 + 16x^2 - 8x^2}{(1 + 4x^2)^2}}\right]$

$= \left[\frac{1 + 4x^2}{4x}\right]\left[1 + \sqrt{\frac{(1 - 4x^2)^2}{(1 + 4x^2)^2}}\right]$

$= \left[\frac{1 + 4x^2}{4x}\right]\left[1 + \frac{1 - 4x^2}{1 + 4x^2}\right]$

$= \left[\frac{1 + 4x^2}{4x}\right]\left[\frac{1 + 4x^2 + 1 - 4x^2}{1 + 4x^2}\right]$

$= \frac{2}{4x} = \frac{1}{2x}$

72. (3) Required percentage

$= \frac{24 - 8}{8} \times 100 = 200\%$

73. (1) Required difference

$= 1875\,[24 - 16] \times \frac{1}{100} = 150$

74. (4) Sectorial angle

$= \frac{32}{100} \times 360 = 115.2°$

75. (1) The least number of runs that Pujara must have scored in total = 25 only then the runs scored against each country will be a whole number.

PART-IV (ENGLISH LANGUAGE)

76. (1) In the given sentence, part (1) has an error. To correct the sentence use 'vexed with' in place of 'vexed at'.

77. (2) In the given sentence, part (2) has an error. To correct the sentence use 'persisted' in place of 'persist'.

78. (4) **Miserly (Adjective):** close fisted; tight-fisted.

Sentence → Peter never spent money – this shows that he was miserly.

79. (3) **Timid (Adjective):** showing a lack of confidence/courage.

80. (4) **Reiterate/Repeat (Verb):** say again; retell.

Sentence → She reiterated her grievances.

81. (2) **Nincompoop/Fool (Noun):** idiot; a dull-headed person.

Sentence → He is a complete nincompoop (foolish person).

82. (3) Opposite of Pellucid is:

Murky (Adjective): dark; gloomy.

Sentence → The sky was murky.

83. (2) Opposite of Adamant is:

Flexible (Adjective): pliable; rupple flexible subber seals.

84. (3) **To quarrel over trifles**

Sentence → It is no use wrangling over an ass's shadow.

85. (4) **To frighten someone**

Make one's flesh creep – make one's skin crawl.

Sentence → Cockroaches make my flesh creep.

86. (2) For improvement of sentence use 'would have appreciated' in place of 'would have been appreciated'.

87. (3) For improvement of sentence use 'surprised at' in place of 'surprised by'.

88. (2) Best substitute of the sentence is **Oncology (Noun):** The study and treatment of tumors.

89. (4) Best substitute of the sentence is **Zenith (Noun):** Something is the time when it is most successful or powerful.

Sentence → His career is now at its Zenith.

90. (2) Correctly spelt word → Leakage

91. (1) Correctly spelt word → Anaesthetic

92. (2) Logical order of the sentences to form a coherent paragraph → QRPS

93. (4) Logical order of the sentences to form a coherent paragraph → RPSQ

94. (1) Passive/Active Voice

A word should be kept.

95. (2) The old man thanked Ankit and assured him that he would never forget his kindness.

It is direct speech of an assertive sentence.

96. (2) Best option for blank → Combining.

97. (1) Best option for blank → Sentiment (Noun).

98. (2) Best option for blank → Common (Adjective).

99. (3) Best option for blank → Strong (Adjective).

100. (4) Best option for blank → Together.

Sentence → In India, people of all castes, colours and creeds live together in harmony.

❑❑❑

11

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 12 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Mathematics : Formulas : : Chemistry : ?
(1) Reactions (2) Organisms
(3) Theorems (4) Gravity

2. YONEX : DUUMG : : JASPO : ?
(1) OGZXX (2) OXXZF
(3) OZTYY (4) OZXXG

3. 49 : 169 : : 66 : ?
(1) 126 (2) 132
(3) 144 (4) 162

Directions (4–6): In the following questions, select the odd word/letter pair/number pair from the given alternatives.

4. (1) Mobile (2) Computer
(3) Fountain Pen (4) Television

5. (1) BN-P (2) GI-R
(3) LM-Y (4) TA-U

6. (1) (143, 64) (2) (232, 49)
(3) (719, 289) (4) (462, 169)

7. Arrange the given words in the sequence in which they occur in the dictionary.
1. Exacts 2. Exotic
3. Exactly 4. Exacerbate
5. Exhaust
(1) 43152 (2) 43251
(3) 53421 (4) 54312

Directions (8–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

8. FK27, LQ64, RW125, ?
(1) CX216 (2) XB216
(3) XC216 (4) YB343

9. 19, 11, 13, 16, 15, 17, 13, 19, 21,?
(1) 10 (2) 11
(3) 12 (4) 15

10. Punit starting from point R walked straight 10 km west, then turned right and walked 12 km and again turned right and walked straight 7 km. In which direction is he from point R?
(1) North-East (2) North-West
(3) South-East (4) South-West

11. Ratio of present ages of P and Q is 9 : 4. The difference between their ages is 20 years. What will be the sum (in years) of their ages after 10 years?
(1) 62 years (2) 66 years
(3) 72 years (4) 76 years

12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
REASONABLE
(1) EASE (2) NOBLE
(3) SEASON (4) SOLAR

13. In a certain code language, "PUNISHED" is written as "288" and "TAILOR" is written as "225". How is "RELEASED" written in that code language?
(1) 207 (2) 237
(3) 225 (4) 243

14. In the following question, by using which mathematical operators will the expression become correct?
15_3_4_20
(1) ×, ÷ and > (2) ÷, × and <
(3) ÷, × and = (4) +, × and =

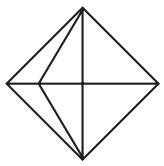
15. If 19 $ 7 = 312 and 23 $ 9 = 448, 31 $ 11 = ?
(1) 231 (2) 441
(3) 641 (4) 840

16. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

3	2	625
5	3	4096
4	2	?

(1) 216 (2) 1024
(3) 1296 (4) 2024

17. How many triangles are there in the given figure?



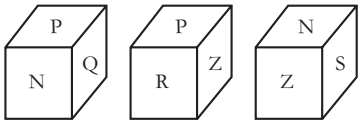
(1) 12 (2) 13
(3) 15 (4) 18

18. In the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements?

Statements:
All stars twinkle.
All satellites twinkle

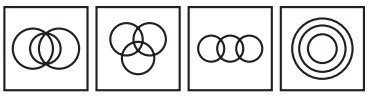
Conclusions:
I. Some stars are satellites.
II. Some stars twinkle.
(1) Only conclusion I follows
(2) Only conclusion II follows
(3) Neither conclusions I nor II follows
(4) Both conclusions follow

19. Three positions of a cube are shown below. What will come opposite to face containing 'N'?



(1) P (2) Q
(3) S (4) Z

20. Identify the diagram that best represents the relationship among the given classes.
Country, State, City

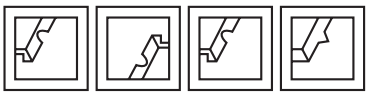


(1) (2) (3) (4)

21. Which answer figure will complete the pattern in the question figure?

Question Figure

Answer Figures

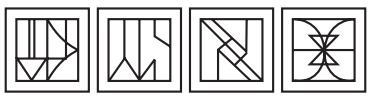


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

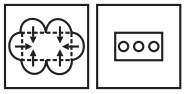
Answer Figures



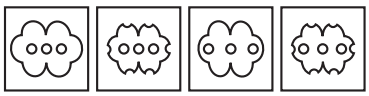
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figure



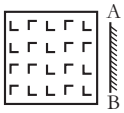
Answer Figures



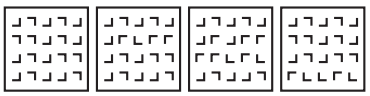
(1) (2) (3) (4)

24. If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'L' can be represented by 22, 43, etc. and 'K' can be represented by 75, 97, etc. Similarly, you have to identify the set for the word 'PACK'.

Matrix-I

	0	1	2	3	4
0	C	L	A	Z	R
1	A	Z	C	R	L
2	Z	R	L	A	C
3	L	A	R	C	Z
4	R	C	Z	L	A

Matrix-II

	5	6	7	8	9
5	S	K	T	P	V
6	T	S	V	K	P
7	K	V	P	S	T
8	P	T	S	V	K
9	V	P	K	T	S

(1) 69, 02, 12, 65
(2) 58, 23, 24, 76
(3) 77, 31, 34, 68
(4) 96, 44, 41, 97

PART-II
(GENERAL AWARENESS)

26. Which of the following pair/pairs is/are incorrect?
I. Golden revolution – Fruits production
II. Blue revolution – Increasing production of fertilizers
III. Yellow revolution – For the production of eggs
(1) Only I
(2) Only II
(3) Both I and II
(4) Both II and III

27. MTNL comes under which of the following category?
(1) Navratna
(2) Maharatna
(3) Mini Ratna
(4) None option is correct

28. Which of the following right has been removed from fundamental rights and converted to a simple legal right?
(1) Right to life and personal liberty
(2) Right to property
(3) Right to education
(4) Right to freedom of religion

29. Which of the following does not come under Fundamental Duty?
(1) To safeguard public property
(2) To protect and improve the natural environment

(3) To promote harmony
(4) To protect freedom of speech and expression

30. Which emperor wrote the play 'Nagananda' in Sanskrit language?
(1) Prabhakaravardhana
(2) Harshavardhana
(3) Chandragupta II
(4) Bindusara

31. Match the following.

Social Reform Movement	Founder
1. Arya Samaj	a. Raja Ram Mohan Roy
2. Brahmo Samaj	b. Dayanand Saraswati
3. Veda Samaj	c. Atmaram Pandurang
4. Prathna Samaj	d. Keshavchandra Sen and K. Sridharalu Naidu

(1) 1 – b, 2 – a, 3 – c, 4 – d
(2) 1 – b, 2 – a, 3 – d, 4 – c
(3) 1 – a, 2 – b, 3 – d, 4 – c
(4) 1 – b, 2 – d, 3 – a, 4 – c

32. The boundary between Earth's crust and mantle is ..... .
(1) Moho discontinuity
(2) Lehman discontinuity
(3) Conrad discontinuity
(4) Gutenberg discontinuity

33. Doldrums pressure belts lies in between which of the following latitudes?
(1) 5° N to 5° S
(2) 35° to 60° N and S
(3) 25° to 35° N and S
(4) 35° to 45° N and S

34. Which component in tobacco makes it harmful for human consumption?
(1) Morphine (2) Nicotine
(3) Heroin (4) None of these

35. What is full form of BOD?
(1) Biological Oxygen Deficit
(2) Biological Oxygen Difference
(3) Biological Oxygen Demand
(4) Biological Oxygen Distribution

36. Alveoli is related to which of the following system of human body?
(1) Circulatory system
(2) Excretory system
(3) Reproductive system
(4) Respiratory system

37. What is the SI unit of intensity of sound?
(1) Decible (2) Newton
(3) Hertz (4) Tesla

38. Which colour is formed when Blue and Green are mixed?
(1) Cyan (2) Brown
(3) Black (4) Violet

39. In computer terminology, what is the full form of FTP?
(1) Final Transfer Position
(2) File Transfer Position
(3) File Transfer Packet
(4) File Transfer Protocol

40. What is an exothermic reaction?
(1) Reaction in which heat is released.
(2) Reaction in which heat is absorbed.
(3) Reaction in which neither heat is released nor absorbed.
(4) None of these

41. What are the main components of Brass Alloy?
(1) Copper and Zinc
(2) Copper and Strontium
(3) Copper, Zinc and Nickel
(4) Copper and Nickel

42. Which among the following is national water animal of India?
(1) Crocodile
(2) Turtle
(3) Alligator
(4) Gangetic Dolphin

43. Pradhan Mantri Surakshit Matritwa Abhiyan provides facility of free health check-up and required treatment on ..... day of every month.
(1) 1^{st} (2) 9^{th}
(3) 15^{th} (4) 30^{th}

44. What was invented by J.B. Dunlop?
(1) Aeroplane (2) Car
(3) Rubber Tyre (4) Rubber Boot

45. At which of the following stadium Sachin Tendulkar scored his 100^{th} international century?
(1) Wankhede Stadium
(2) Sher-e-Bangla Stadium
(3) Shaheed Chandu Stadium
(4) Barabati Stadium

46. Who amongst the following is a renowned vocalist?
(1) Kaushalaya Reddy
(2) Manjit Bawa
(3) Raja Ravi Verma
(4) Pt. Jasraj

47. Which actress has been awarded with 64^{th} National film Award 2017?
(1) Surabhi C.M.
(2) Tapasee Pannu
(3) Trisha Krishnan
(4) Anushka Shetty

48. What is the name of the auto-biography of Sachin Tendulkar?
(1) Numbers Do Lie
(2) Playing It My Way
(3) Once upon a Time
(4) What is Remembered

49. India recently notified the Third protocol to amend Double Taxation Avoidance Agreement with which of the following countries?
(1) China (2) Vietnam
(3) Singapore (4) Malaysia

50. Match the following.

Country	Currency
1. Bangladesh	a. Ngultrum
2. Myanmar	b. Rufiyaa
3. Maldives	c. Taka
4. Bhutan	d. Kyat

(1) 1 – d, 2 – c, 3 – a, 4 – b
(2) 1 – b, 2 – d, 3 – a, 4 – c
(3) 1 – c, 2 – d, 3 – b, 4 – a
(4) 1 – c, 2 – d, 3 – a, 4 – b

PART-III (QUANTITATIVE APTITUDE)

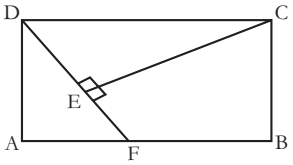
51. If 56M4 is completely divisible by 11, then what is the value of M?
(1) 0 (2) 1
(3) 3 (4) 5

52. A and B can together do a piece of work in 10 days. If A works with twice of his efficiency of B works with an efficiency $\frac{1}{3}^{rd}$ less than his efficiency, then the work gets

completed in 6 days. In how many days can A and B do the work alone respectively?

(1) $\frac{40}{3}$, 40 days (2) $\frac{20}{3}$, 20 days

(3) 30, $\frac{20}{3}$ days (4) $\frac{50}{3}$, 25 days

53. 

In the given figure, ABCD is a rectangle. F is a point on AB and CE is drawn perpendicular to DF. If CE = 60 cm and DF = 40 cm, then what is the area (in cm^2) of the rectangle ABCD?

(1) 1200 cm^2 (2) 1800 cm^2
(3) 2400 cm^2 (4) 2800 cm^2

54. What will be the net discount (in %) of two successive discounts of 15% and 35%?

(1) 44.75% (2) 51.25%
(3) 55.25% (4) 56.25%

55. A company, at the time of inflation reduced the staff in the ratio 5 : 4 and average salary per employee is increased in the ratio 7 : 8. By doing so, the company saved ₹ 55,000/-. What was the initial expenditure (in ₹) of company?

(1) ₹ 1,55,000/- (2) ₹ 1,60,000/-
(3) ₹ 1,75,000/- (4) ₹ 2,15,000/-

56. a, b and c are 3 values, such that $a + b = 5$, $b + c = 7.5$ and $c + a = 8.5$. What will be the average of these values?

(1) 1.5 (2) 3
(3) 3.5 (4) 4.5

57. Due to increase of 33.33% in the price of apples, a customer can purchase 4 apples less for ₹ 16/-. What is the original price (in paise) of an apple?

(1) 100 paise (2) 125 paise
(3) 150 paise (4) $\frac{400}{3}$ paise

58. Due to increase of k% in the side, the area of a square increases by 69%. What is the value of k?

(1) 30 (2) 33
(3) 34.5 (4) 35

59. A starts from a point at a speed of 30 m/sec. After 3 sec, B starts chasing A from the same point with a speed of 50 m/sec. What will be the total distance (in metres) travelled by A and B before A is caught by B?

(1) 360 m (2) 450 m
(3) 600 m (4) 720 m

60. The difference between compound interest and simple interest on a sum for 2 year at 20% per annum is ₹ 200/-. If the interest is compounded half yearly, then what is the difference (in ₹) between compound and simple interest for 1st year?

(1) ₹ 50/- (2) ₹ 75/-
(3) ₹ 100/- (4) ₹ 150/-

61. If $x(2x + 3) = 90$ and $7y^{-\frac{1}{2}} + 2y^{-\frac{1}{2}} = y^{\frac{1}{2}}$ (x and y are positive numbers), then what is the value of $x^2 + y^2$?

(1) 45 (2) 109
(3) 117 (4) 126

62. If $\frac{x}{y} = \frac{4}{9}$, then what is the value of $\frac{(7x^2 - 19xy + 11y^2)}{y^2}$?

(1) $\frac{59}{81}$ (2) $\frac{100}{27}$
(3) $\frac{319}{81}$ (4) $\frac{913}{81}$

63. If $(x - 3) + \left[\frac{1}{(x-3)}\right] = 4$, what is the value of $(x-3)^3 + \left[\frac{1}{(x-3)^3}\right]$?

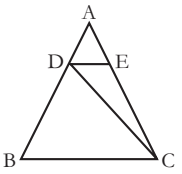
(1) 14 (2) 18
(3) 52 (4) 76

64. If $x^2 + y^2 + z^2 = xy + yz + zx$, then what is the value of $\frac{(7x + 3y - 5z)}{5x}$?

(1) 0 (2) 1
(3) 5 (4) $\frac{33}{5}$

65. The length of diagonal BD of a parallelogram ABCD is 36 cm. P and Q are the centroids of ΔABC and ΔADC respectively. What is the length (in cm) of PQ?

(1) 6 cm (2) 9 cm
(3) 12 cm (4) 18 cm

66. 

In the given figure, DE || BC and DE = $\frac{1}{3}$ BC. If area of triangle ADE = 20 cm^3, then what is the area (in cm^2) of ΔDEC?

(1) 40 cm^2 (2) 60 cm^2
(3) 80 cm^2 (4) 120 cm^2

67. If an equilateral triangle has side 12 cm, then what is the difference (in cm) between the circumradius and inradius?

(1) $2\sqrt{2}$ cm (2) $3\sqrt{2}$ cm
(3) $2\sqrt{3}$ cm (4) $3\sqrt{3}$ cm

68. If sum of the areas of the circumcircle and the incircle of an equilateral triangle is 770 cm^2, then what is the area (in cm^2) of the triangle?

(1) $125\sqrt{3}$ cm^2 (2) $147\sqrt{3}$ cm^2
(3) $156\sqrt{3}$ cm^2 (4) $169\sqrt{3}$ cm^2

69. What is the value of $\sin\left(-\frac{\pi}{3}\right) + \cos\left(-\frac{\pi}{6}\right)$?

(1) 0 (2) 1
(3) 2 (4) 3

70. If θ is acute angle and $\tan\theta - \cot\theta = 0$, then what is the value of $\tan^{26}\theta + \cot^{100}\theta$?

(1) –2 (2) 0
(3) 1 (4) 2

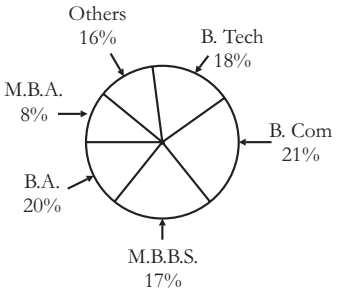
71. If $\sin 3\theta \sec 2\theta = 1$, then what is the value of $\left[3\tan^2\left(\frac{5\theta}{2}\right) - 1\right]$?

(1) 0 (2) 1
(3) 2 (4) 3

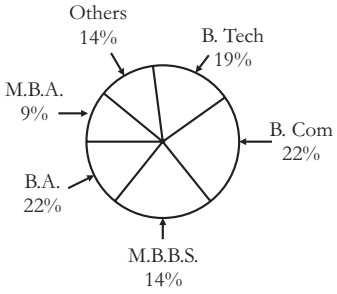
Directions (72–75): The Pie chart 1 below shows the segregation of 40000000 candidates who have filled the form of an examination. Pie chart 2 shows the segregation in the examination 35000000 candidates who were present in

the examination. The segregation in both pie charts has been done on the basis of the highest qualification.

Pie Chart - 1



Pie Chart - 2



72. If 18% of M.B.B.S. who have filled the form are from XYZ University, then how many M.B.B.S. candidates from XYZ University have filled the form?

(1) 1512000 (2) 1224000
(3) 1440000 (4) None of these

73. What is the absolute difference in the B.Tech.'s who have filled the form and M.B.A.'s who were present in the examination?

(1) 3500000 (2) 3000000
(3) 4050000 (4) 4000000

74. 50% of others who have filled the form are B. Arch. and 45% of others who were present in the exam are B. Arch. How many B. Arch. candidates did not gave the exam?

(1) 995000 (2) 685000
(3) 430000 (4) 756000

75. Which highest qualification accounted for most number of absentees?

(1) B.A. (2) Others
(3) B. com. (4) None of these

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. If it would (1)/ rain, they will (2)/ not come. (3)/ No error (4)

77. Organic pulses are so popular today (1)/ that many people wonder (2)/ how they ever lived without them. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. My father did not approve ..... the plan of travelling to Uttarakhand because of bad weather there.

(1) of (2) one
(3) to (4) with

79. I settled ..... Canada last year.

(1) at (2) in
(3) off (4) on

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Abeyance

(1) Commencement
(2) Perjure
(3) Condone
(4) Suspension

81. Dauntless

(1) Brave (2) Insane
(3) Playful (4) Ugly

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Clandestine

(1) Abrupt (2) Illicit
(3) Open (4) Wary

83. Intrepid

(1) Greed (2) Kind
(3) Meek (4) Sigh

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. To steal a march

(1) To act in a foolish way
(2) To break something
(3) To outshine
(4) To see a hidden meaning

85. In a jiffy

(1) Fail to win appreciation
(2) In an appropriate manner
(3) Something that is done very quickly
(4) To fall in love

Directions (86–87): Improve the **bold** part of the sentence.

86. **After he arrived** from office, he goes to gym.

(1) After he had being arriving
(2) After he had arrived
(3) After he arrives
(4) No improvement

87. When I first saw Ankit, he **was playing** cricket.

(1) had played
(2) had been playing
(3) played
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

88. Mania for travel

(1) Dromomania
(2) Hypomania
(3) Megalomania
(4) Nymphomania

89. One who has suddenly gained new wealth, power or prestige.

(1) Egotist (2) Imposter
(3) Parvenu (4) Scullery

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Acquiescence (2) Alienate
(3) Belligerent (4) Sabbotage

91. (1) Alluminium (2) Cemetery
(3) Recommend (4) Satellite

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. P. It isn't bragging about how great you are.
Q. It's not about thinking you're perfect because nobody is but knowing that you're worthy of being love and accepted.
R. Self esteem is how much you value yourself and how important you think you are.
S. It's how you see yourself and feel about your achievements.
(1) SQRP (2) RQSP
(3) RSPQ (4) SRQP

93. P. Most of them are combinations of hydrogen and carbon in varying proportions.
Q. Crude mineral oil comes out of the earth as a thick brown or black liquid with a strong smell.
R. It is a complex mixture of many different substances, each with it's own individual qualities.
S. Such hydrocarbons are also found in other forms such as bitumen, asphalt and natural gas.
(1) QPRS (2) PQRS
(3) PQSR (4) QRPS

94. In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
He shall have bought a car.
(1) A car was being bought by him.
(2) A car was bought by him.
(3) A car will have been bought by him.
(4) A car would have been bought by him.

95. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
The teacher said to the student, "Have you brought your lunch?"
(1) The student was asked by the teacher about bringing his lunch.
(2) The teacher asked the student if he would be bringing his lunch.
(3) The teacher asked the student if he had brought his lunch.
(4) The teacher asked the student if he has brought his lunch.

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Children need to be taught the importance of hygiene early on so that it becomes a ...**(96)**... . Children are the most ...**(97)**... to hygiene-related disorders like skin issues, rashes, infections, wounds, etc. Teach them early on about what to ...**(98)**... . Teach them that taking a few ...**(99)**... measures to prevent infections and diseases is ...**(100)**... .

96. (1) kind (2) habit
(3) regular (4) need

97. (1) innocent (2) responsible
(3) pliable (4) susceptible

98. (1) avoid (2) read
(3) right (4) learn

99. (1) scientific
(2) precautionary
(3) unimportant
(4) insignificant

100. (1) optional
(2) secondary
(3) voluntary
(4) imperative

Short Answers

1. (1)	**2.** (1)	**3.** (3)	**4.** (3)	**5.** (2)	**6.** (4)	**7.** (1)	**8.** (3)	**9.** (1)	**10.** (2)
11. (3)	**12.** (3)	**13.** (1)	**14.** (3)	**15.** (4)	**16.** (3)	**17.** (3)	**18.** (3)	**19.** (4)	**20.** (4)
21. (1)	**22.** (1)	**23.** (2)	**24.** (1)	**25.** (4)	**26.** (4)	**27.** (1)	**28.** (2)	**29.** (4)	**30.** (2)
31. (2)	**32.** (1)	**33.** (1)	**34.** (2)	**35.** (3)	**36.** (4)	**37.** (1)	**38.** (1)	**39.** (4)	**40.** (1)
41. (1)	**42.** (2)	**43.** (2)	**44.** (3)	**45.** (2)	**46.** (4)	**47.** (1)	**48.** (2)	**49.** (3)	**50.** (3)
51. (4)	**52.** (1)	**53.** (3)	**54.** (1)	**55.** (3)	**56.** (3)	**57.** (1)	**58.** (1)	**59.** (2)	**60.** (1)
61. (3)	**62.** (3)	**63.** (3)	**64.** (2)	**65.** (3)	**66.** (1)	**67.** (3)	**68.** (2)	**69.** (1)	**70.** (3)
71. (3)	**72.** (2)	**73.** (3)	**74.** (1)	**75.** (4)	**76.** (1)	**77.** (3)	**78.** (1)	**79.** (2)	**80.** (4)
81. (1)	**82.** (3)	**83.** (3)	**84.** (3)	**85.** (3)	**86.** (3)	**87.** (3)	**88.** (1)	**89.** (3)	**90.** (4)
91. (1)	**92.** (3)	**93.** (4)	**94.** (3)	**95.** (3)	**96.** (2)	**97.** (4)	**98.** (1)	**99.** (2)	**100.** (4)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (1) Mathematics is the abstract science of numbers, quantities and formula's. Similarly, chemistry is the study of elements and compounds and their reactions.

2. (1)

Y	O	N	E	X		J	A	S	P	O
+5	+6	+7	+8	+9		+5	+6	+7	+8	+9
D	U	U	M	G		O	G	Z	X	X

3. (3) As,
$(4 + 9)^2 = (13)^2 = 169$
Similarly,
$(6 + 6)^2 = (12)^2 = 144$

4. (3) Except fountain pen, all others are electronics products.

5. (2) B (2) + N (14) = P (16)
G (7) + I (9) ≠ R (18)
L (12) + M (13) = Y (25)
T (20) + A (1) = U (21)

6. (4) $(143, 64) \rightarrow (1 + 4 + 3)^2 = (8)^2 = 64$
$(232, 49) \rightarrow (2 + 3 + 2)^2 = (7)^2 = 49$
$(719, 289) \rightarrow (7 + 1 + 9)^2 = (17)^2 = 289$
$(462, 169) \rightarrow (4 + 6 + 2) = (12)^2 \neq 169$

7. (1) Arrangement of the words as per English dictionary :
Exacerbate (4) → Exactly (3) → Exacts (1) → Exhaust (5) → Exotic (2)

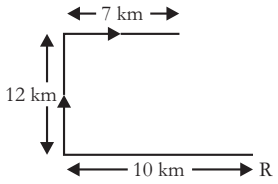
8. (3)

F K	27	L Q	64	R W	125	X C	216
	+6		+6		+6		
	3^3		4^3		5^3		6^3

9. (1)

19	11	13	16	15	17	13	19	21	10
	−3		−3		−3				
	+2		+2		+2		+2		+2

10. (2)



Punit is in North-West direction from the point R.

11. (3) P's present age = $9x$ years
Q's present age = $4x$ years
According to question,
$9x - 4x = 20$
or, $5x = 20$
$x = 4$
The sum of their ages after 10 years
$= 9x + 10 + 4x + 10$
$= 13x + 20$
$= 13 \times 4 + 20$
$= 52 + 20 = 72$ years

12. (3) The word 'SEASON' cannot be formed using the letters of the given word because the word 'REASONABLE' does not have two 'S'.

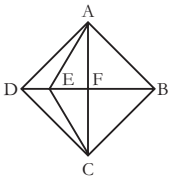
13. (1) As,
PUNISHED
$= 16 + 21 + 14 + 9 + 19 + 8 + 5 + 4$
$96 \times 6 = 288$
TAILOR $= 20 + 1 + 9 + 12 + 15 + 18$
$= 75 \times 3 = 225$
Similarly,
RELEASED
$= 18 + 5 + 12 + 5 + 1 + 19 + 5 + 4$
$= 69 \times 3 =$ **207**

14. (3) $15 - 3 - 4 - 20$
From option (3),
$15 \div 3 \times 4 = 20$
$5 \times 4 = 20$
$20 = 20$

15. (4) As,
$19 \$ 7 \rightarrow (19)^2 - (7)^2$
$= 361 - 49 = 312$
$23 \$ 9 \rightarrow (23)^2 - (9)^2$
$= 529 - 81 = 448$
Similarly,
$31 \$ 11 \rightarrow (31)^2 - (11)^2$
$= 961 - 121 =$ **840**

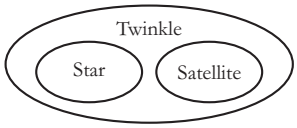
16. (3) As, $(3 + 2)^4 = (5)^4 = 625$
$(5 + 3)^4 = (8)^4 = 4096$
Similarly, $(4 + 2)^4 = (6)^4 =$ **1296**

17. (3)



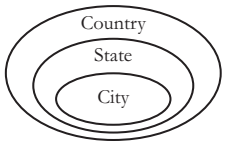
Triangles = AED, AEF, AFD, AFB, CED, CEF, CFD, CFB, ECA, DCA, BAC, ADB, AEB, CEB, CBD = 15

18. (3)



19. (4) P, Q, S and Z are on the faces adjacent to N.
∴ R lies opposite N.

20. (4)



21. (1)

22. (1)

23. (2)

24. (1)

25. (4) P → 85, **96**, 77, 58, 69
A → 10, 31, 02, 23, **44**
C → 00, **41**, 12, 33, 24
K → 75, 56, **97**, 68, 89

PART-II
(GENERAL AWARENESS)

26. (4) Blue Revolution – Fishes production.
Yellow Revolution – Oil seeds production.

27. (1) Mahanagar Telephone Nigam, a Navratna categories company was created by the Government of India in 1986 to oversee the telephone services of Delhi and Mumbai.

28. (2) The Indian Constitution does not recognise property right as a fundamental

right. The 44th amendment (1977) eliminated the right to acquire, hold and dispose of property as a fundamental right.

29. (4) Article 19(1)(a) of Indian Constitution says that all citizens have the right to freedom of speech and expression.

30. (2) **King Harshavardhana:** An emperor of Northern part of India and his capital was Kanauj. He also wrote three Sanskrit plays, namely Nagananda, Ratnavali and Priyadarsika.

31. (2) Arya Samaj – Dayanand Saraswati

Brahmo Samaj – Raja Ram Mohan Roy

Veda Samaj – Keshab Chandra Sen and K. Sridharalu Naidu

Prathna Samaj – Atmaram Pandurang

32. (1) The Mohorovicic Discontinuity, or 'Moho' is the boundary between the crust and the mantle.

33. (1) The doldrums, usually located between 5° north and 5° south of the equator, are also known as the Intertropical Convergence Zone (ITCZ).

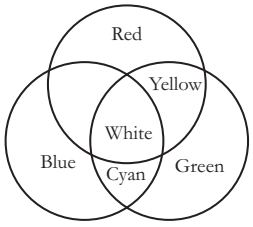
34. (2) Tobacco is a plant grown for its leaves, which are smoked, chewed or sniffed. Tobacco contains a chemical called nicotine and it is an addictive substance.

35. (3) **Biological Oxygen Demand (BOD):** It is a measurement of the amount of dissolved oxygen (DO) that is used by aerobic microorganisms when decomposing organic matter in water.

36. (4) **Alveoli:** The tiny sacs within our lungs that allow oxygen and carbon dioxide to move between the lungs and bloodstream.

37. (1) Sound Intensity is the sound power per unit area, a sound energy quantity; the SI units are watts/m^2.

38. (1)



39. (4) **File Transfer Protocol (FTP):** It is a standard network protocol used for the transfer of computer files between a client and server on a computer network.

40. (1) An exothermic reaction is a chemical reaction that releases energy by light or heat. It is the opposite of an endothermic reaction.

41. (1) Brass is a metallic alloy that is made of copper and zinc.

42. (4) River Dolphin or Gangetic Dolphin is the National Aquatic Animal of India.

43. (2) **Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA):** It aimed to reduce maternal and infant mortality rates through safe pregnancies and safe deliveries. It will provide fixed day assured, comprehensive and quality antenatal care to pregnant women on the 9th of every month.

44. (3) John Boyd Dunlop in October 1887, developed the first practical pneumatic or inflatable tyre and developed them for use in cycle racing.

45. (2) Sachin Tendulkar became the first batsman to make a 100 international centuries, getting to the milestone against Bangladesh at the Shere Bangla stadium in Mirpur on March 16, 2012.

46. (4) Pandit Jasraj is an Indian classical vocalist. He belongs to the Mewati gharana of Hindustani classical music.

47. (1) 64th National Film Award winner:

Best Actor – Akshay Kumar (Rustom)

Best Actress – Surabhi Lakshmi (Minnaminungu)

Best Director – Rajesh Mapuskar (Ventilator)

Best Film on Social Issues – Pink

48. (2) 'Playing It My Way' is the autobiography of Sachin Tendulkar. It was launched on 5 November 2014 in Mumbai.

49. (3) The Third Protocol amending India-Singapore Double Taxation Avoidance Agreement (DTAA) which was signed on 30th December, 2016, has come into force on 27th February 2017.

50. (3)

Country	Currency
Bangladesh	Taka
Myanmar	Kyat
Maldives	Rufiyaa
Bhutan	Ngultrum

PART-III (QUANTITATIVE APTITUDE)

51. (4) According to question,

$$5 + M = 6 + 4$$
$$M = 10 - 5$$
$$M = 5$$

52. (1) According to question,

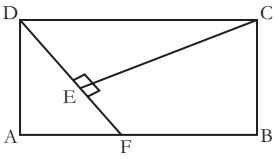
$$\frac{1}{A} + \frac{1}{B} = \frac{1}{10} \quad \text{... (i)}$$

$$\frac{2}{A} + \frac{2}{3B} = \frac{1}{6} \quad \text{... (ii)}$$

On solving equations (i) and (ii),

$$A = \frac{40}{3},\ B = 40$$

53. (3)



In ΔDAF and ΔDEC,

$\angle EDC = \angle DFA$

$\angle DAF = \angle CED$

By AA- similarity

$\angle DAF \sim \angle DEC$

$\therefore \quad \frac{DF}{DA} = \frac{DC}{CE}$

$\Rightarrow DA \times CD = CE \times DF$

$\therefore$ Area of rectangle ABCD

$= 60 \times 40$

$= 2400\ cm^2$

54. (1) Net discount

$$= 15 + 35 - \frac{15 \times 35}{100}$$

$$= 50 - 5.25 = 44.75\%$$

55. (3) Number of employees in the starting = x

The average salary in the starting = y

Initial expenditure = xy

The employees were reduced in the ratio 5 : 3, then the number of employees = $\frac{3x}{5}$

The average salary was increased in the ratio 7 : 8, then average salary = $\frac{8}{7}y$

According to question,

$$xy - \frac{3x}{5} \times \frac{8y}{7} = 55000$$

or, $\frac{35xy - 24xy}{35} = 55000$

or, $11xy = 35 \times 55000$

$\therefore$ $xy = 175000$

56. (3) $a + b = 5$ ... (i)

$b + c = 7.5$ ... (ii)

$c + a = 8.5$ ... (iii)

On adding equations (i), (ii) and (iii),

$2(a + b + c) = 5 + 7.5 + 8.5$

$$a + b + c = \frac{21}{2}$$

$$\frac{a + b + c}{3} = \frac{21}{2 \times 3} = \frac{7}{2}$$

$$\frac{a + b + c}{3} = 3.5$$

57. (1) Original price of an apple = x

According to question,

$$\frac{16}{x} - \frac{16 \times 100}{133.33x} = 4$$

or, $\frac{2133.28 - 1600}{133.33x} = 4$

or, $x = \frac{533.38}{133.33 \times 4}$

$\therefore$ $x = 0.99 \times 100$

$x = 100$ paise

58. (1) Side of the square = a

Area of Square = a^2

New side of the square

$$= \frac{a \times (100 + k)}{100}$$

According to question,

$$\left[\frac{a(100 + k)}{100}\right]^2 = a^2 \times \frac{169}{100}$$

or, $\frac{a(100 + k)}{100} = \frac{13a}{10}$

or, $100 + k = 130$

$\therefore$ $k = 30$

59. (2) Distance covered by A in 3 second = $30 \times 3 = 90$ m

Distance covered by B = d metre

According to question,

$$\frac{d}{50} = \frac{d - 90}{30}$$

$3d = 5d - 450$

$2d = 450$

$d = 225$ m

Total distance travelled by A and B

$= 2 \times 225 = 450$ m

60. (1) According to question,

$$D = \frac{P(R)^2}{(100)^2}$$

$$200 = \frac{P \times (20)^2}{10000}$$

$$P = \frac{200 \times 10000}{400}$$

$P = 5000$

Required difference

$$= 5000\left[\left(1 + \frac{\frac{20}{2}}{100}\right)^2\right] - 5000 - \frac{5000 \times 20 \times 1}{100}$$

$$= 5000\left[\frac{121}{100} - 1 - \frac{20}{100}\right]$$

$$= \frac{5000\,[121 - 100 - 20]}{100}$$

$= 50 \times 1 = 50$

61. (3) $x(2x + 3) = 90$

or, $2x^2 + 3x - 90 = 0$

or, $2x^2 + 15x - 12x - 90 = 0$

or, $x(2x + 15) - 6(2x + 15) = 0$

or, $(2x + 15)(x - 6) = 0$

$$x = 6, -\frac{15}{2}$$

$$7y^{-\frac{1}{2}} + 2y^{-\frac{1}{2}} = y^{\frac{1}{2}}$$

or, $\frac{49}{y} + \frac{4}{y} + \frac{28}{y} = y$

or, $81 = y^2$

$\therefore$ $y = 9$

$x^2 + y^2 = (6)^2 + (9)^2$

$= 36 + 81$

$= 117$

62. (3) $\frac{x}{y} = \frac{4}{9}$

$$\frac{7x^2 - 19xy + 11y^2}{y^2}$$

$$= 7\left(\frac{x}{y}\right)^2 - 19\frac{x}{y} + 11$$

$$= 7\left[\frac{4}{9}\right]^2 - 19 \times \frac{4}{9} + 11$$

$$= \frac{7 \times 16}{81} - \frac{76}{9} + 11$$

$$= \frac{112 - 684 + 891}{81}$$

$$= \frac{319}{81}$$

63. (3) $(x - 3) + \frac{1}{(x - 3)} = 4$

$(x - 3)^3 + \frac{1}{(x - 3)^3} +$

$3\left[(x - 3) + \frac{1}{(x - 3)}\right] = 64$

$(x - 3)^3 + \frac{1}{(x - 3)^3} = 64 - 3 \times 4$

$= 52$

64. (2) $x^2 + y^2 + z^2 = xy + yz + zx$

$\Rightarrow 2(x^2 + y^2 + z^2) = 2(xy + yz + zx)$

$\Rightarrow 2x^2 + 2y^2 + 2z^2 - 2xy - 2yz - 2zx = 0$

$\Rightarrow (x - y)^2 + (y - z)^2 + (z - x)^2 = 0$

$\Rightarrow x = y = z$ [If $a^2 + b^2 + c^2 = 0$

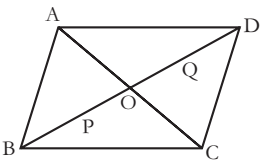
$\Rightarrow a = b = c = 0$]

$\therefore$ $\frac{7x + 3y - 5z}{5x} = \frac{7x + 3x - 5x}{5x}$

$= \frac{5x}{5x} = 1$

65. (3) BD = 36 cm

$\because$ The diagonals bisect each other in a parallelogram.



$\therefore$ BD = OD = $\frac{36}{2}$ = 18 cm

$\because$ The centroid divides the median in the ratio 2 : 1.

$\therefore$ PO = $18 \times \frac{1}{3}$ = 6 cm

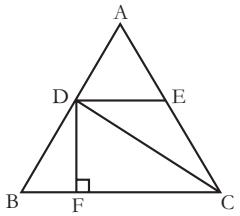
OQ = $18 \times \frac{1}{3}$ = 6 cm

BD = PQ + OQ

= 6 + 6

= 12 cm

66. (1)



DE || BC

$\therefore$ $\angle ADE = \angle ABC$

$\angle AED = \angle ACB$

By AA-similarity

$\angle ADE \sim \angle ABC$

$$\frac{ar(\Delta ADE)}{ar(\Delta ABC)} = \left(\frac{DE}{BC}\right)^2 = \left(\frac{1}{3}\right)^2$$

$$\frac{20}{ar(\Delta ADE) + ar(\Delta DEC) + ar(\Delta DBC)}$$

$$= \frac{1}{9}$$

$\Rightarrow 20 + ar(\Delta DEC) + ar(\Delta DBC) = 180$

$\Rightarrow ar(\Delta DEC) + ar(\Delta DBC) = 160$

$\Rightarrow \frac{1}{2} \times DE \times DF + \frac{1}{2} \times BC \times DF = 160$

$\Rightarrow DE \times DF + 3DE \times DF = 320$

$\Rightarrow 4DE \times DF = 320$

$\Rightarrow DE \times DF = 80$

$$ar(\Delta DEC) = \frac{1}{2} \times DE \times DF$$

$$= \frac{1}{2} \times 80$$

$$= 40 \text{ cm}^2$$

67. (3) Circumradius $= \frac{12}{\sqrt{3}}$

$$\text{Inradius} = \frac{12}{2\sqrt{3}} = \frac{6}{\sqrt{3}}$$

$$\text{Required difference} = \frac{12}{\sqrt{3}} - \frac{6}{\sqrt{3}}$$

$$= \frac{6}{\sqrt{3}}$$

$$= 2\sqrt{3} \text{ cm}$$

68. (2) Circumradius $= \frac{a}{\sqrt{3}}$

$$\text{Inradius} = \frac{a}{2\sqrt{3}}$$

According to question,

$$\pi\left[\frac{a}{\sqrt{3}}\right]^2 + \pi\left[\frac{a}{2\sqrt{3}}\right]^2 = 770$$

$$\pi\left[\frac{a^2}{3} + \frac{a^2}{12}\right] = 770$$

$$= \frac{4a^2 + a^2}{12} = \frac{770 \times 7}{22}$$

$$5a^2 = \frac{70 \times 7 \times 12}{2}$$

$$a^2 = 588$$

$$\text{Area of equilateral triangle} = \frac{\sqrt{3}}{4}a^2$$

$$= \frac{\sqrt{3}}{4} \times 588$$

$$= 147\sqrt{3} \text{ cm}^2$$

69. (1) $\sin\left(-\frac{\pi}{3}\right) + \cos\left(-\frac{\pi}{6}\right)$

$$= -\sin\frac{180}{3} + \cos\frac{180}{6}$$

$$= -\sin 60° + \cos 30°$$

$$= -\frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2}$$

$$= 0$$

70. (3) $\tan\theta = \cot\theta$

$$\tan\theta = \tan(90 - \theta)$$

$$\theta = 90 - \theta$$

$$2\theta = 90$$

$$\theta = 45°$$

$\tan^{26}\theta + \cot^{100}\theta = \tan^{26} 45° + \cot^{100} 45°$

$$= (1)^{26} + (1)^{26} = 2$$

71. (3) $\sin 3\theta \sec 2\theta = 1$

or, $\sin 3\theta = \frac{1}{\sec 2\theta}$

or, $\sin 3\theta = \cos 2\theta = \sin(90° - 2\theta)$

or, $3\theta = 90° - 2\theta$

or, $5\theta = 90° \Rightarrow \theta = \frac{90}{5} = 18°$

$\therefore 3\tan^2\left(\frac{5\theta}{2}\right) - 1$

$$= 3\tan^2\left(\frac{5 \times 18°}{2}\right) - 1$$

$$= 3\tan^2 45° - 1$$

$$= 3 - 1$$

$$= 2$$

72. (2) Required students

$$= 40000000 \times \frac{17}{100} \times \frac{18}{100}$$

$$= 1224000$$

73. (3) Required difference

$$= 40000000 \times \frac{18}{100} - 35000000 \times \frac{9}{100}$$

$$= 7200000 - 3150000$$

$$= 4050000$$

74. (1) Required students

$$= 40000000 \times \frac{16}{100} \times \frac{50}{100} - 35000000 \times \frac{14}{100} \times \frac{45}{100}$$

$$= 3200000 - 2205000$$

$$= 995000$$

75. (4) Absentees in M.B.B.S.

$$= \frac{40000000 \times 17}{100} - \frac{35000000 \times 14}{100}$$

$$= 6800000 - 4900000$$

$$= 1900000$$

$\therefore$ Most number of absentees are in M.B.B.S.

PART-IV (ENGLISH LANGUAGE)

76. (1) In the given sentence, part (1) has an error. To correct the sentence use 'If it' in place of 'If it would'.

77. (3) In the given sentence, part (3) has an error. To correct the sentence use 'had ever' in place of 'they ever'.

78. (1) **Approve of (Phrasal Verb):** to agree to something, often in an ethical, religious or moral sense.

79. (2) Preposition (in) – used for referring to a big area.

80. (4) **Abeyance/Suspension (Noun):** a state of dormancy.

Sentence → Matters were held in abeyance.

81. (1) **Dauntless/Brave (Adjective):** courageous; fearless; dauntless bravery.

82. (3) Opposite of Clandestine is

Open (Adjective): not closed; not shut.

83. (3) Opposite of Intrepid is

Meek (Adjective): obedient; patient.

Sentence → She brought her meek little husband along.

84. (3) **To Outshine**

Sentence → Our rival company managed to steal a march on us by bringing out their software ahead of ours.

85. (3) **Something that is done very quickly.**

Sentence → They left the party in a jiffy.

86. (3) For improvement of sentence use 'After he arrives' in place of 'After he arrived'.

87. (3) For improvement of sentence use 'played' in place of 'was playing'.

88. (1) Best substitute of the sentence is **Dromomania (Noun):** an uncontrollable desire to travel.

89. (3) Best substitute of the sentence is **Parvenu (Noun):** someone from a low social position who has suddenly become rich or successful.

The political inexperience of a pervenu.

90. (4) Correctly spelt word → Sabotage.

91. (1) Correctly spelt word → Aluminium.

92. (3) Logical order of the sentences to form a coherent paragraph → RSPQ.

93. (4) Logical order of the sentences to form a coherent paragraph → QRPS.

94. (3) Passive/Active Voice

A car will have been bought by him. Active voice containing a model verb (shall) and an auxiliary verb (have).

95. (3) Indirect/Direct Speech

The teacher asked the student if he had brought his lunch.

Direct speech of an interrogative sentence.

96. (2) Best option for blank → Habit.

97. (4) Best option for blank → Susceptible.

98. (1) Best option for blank → Avoid.

99. (2) Best option for blank → Precautionary.

100. (4) Best option for blank → Imperative.

❑❑❑

12 SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 11 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Hockey : Stick : : Boxing : ?
(1) Bat (2) Ball
(3) Sword (4) Gloves

2. FS: LY : : IV: ?
(1) GT (2) HS
(3) IR (4) TZ

3. 19 : 367 : : ? : ?
(1) 21 : 447 (2) 22 : 491
(3) 29 : 850 (4) 31 : 963

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Sea (2) Ocean
(3) Lake (4) Marsh

5. (1) AJ (2) EN
(3) NW (4) PW

6. (1) 170 (2) 290
(3) 360 (4) 530

7. Arrange the given words in the sequence in which they occur in the dictionary.
1. Effacers
2. Effacing
3. Effaceable
4. Effacements
5. Effacement

(1) 34125 (2) 35412
(3) 43152 (4) 43215

Directions (8–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

8. C11, V17, O23,?
(1) H30 (2) H31
(3) I29 (4) I31

9. 19, 26, 45, 71, 116,?
(1) 166 (2) 172
(3) 184 (4) 187

10. Abhinav travels 10 km north then turns left. Then he travels 6 km and turns right and cover another 7 km. He finally turns to right and travels another 6 km. How far (in km) is he from the point of starting his journey?
(1) 14 km (2) 16 km
(3) 15 km (4) 17 km

11. In the English alphabet, which letter is 13th from right end?
(1) L (2) M
(3) N (4) O

12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
HANDSOME
(1) HATS (2) HOME
(3) NAME (4) SAND

13. In a certain code language, "ACCOUNT" is written as "DFFRXQW". How is "MATHS" written in that code language?
(1) PDWKV (2) PKLKP
(3) PEWLU (4) PWDVK

14. If "–" means "divided by", "+" means "multiplied by", "÷" means "added to", "×" means "subtracted from", then $11 \div 6 - 2 + 5 \times 3 = ?$
(1) 17 (2) 21
(3) 23 (4) 26

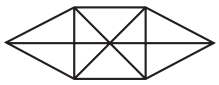
15. If 3 # 6 * 9 = 45 and 9 # 8 * 7 = 105, then what is the value of 5 * 6 # 3 =?
(1) 14 (2) 68
(3) 86 (4) 90

16. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

336	170	748
523	78	349
431	?	328

(1) 33 (2) 34
(3) 36 (4) 37

17. How many triangles are there in the given figure?



(1) 16 (2) 20
(3) 22 (4) 24

18. In the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements?

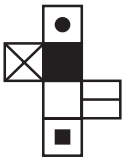
Statements:
All bags are tables.
No table is red.

Conclusions:
I. Some bags are red.
II. All bags are red.

(1) Only conclusion I follows
(2) Only conclusion II follows
(3) Neither conclusion I nor II follows
(4) Both conclusions follow

19. From the given options, which answer figure can be formed by folding the figure given in the question?

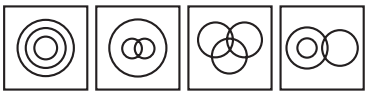
Question Figure



Answer Figures

(1) (2) (3) (4)

20. Identify the diagram that best represents the relationship among the given classes.
Bull, Animal, Carnivorous

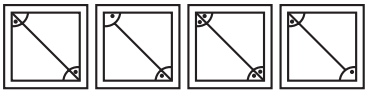


(1) (2) (3) (4)

21. Which answer figure will complete the pattern in the question figure?

Question Figure

Answer Figures

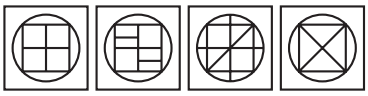


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

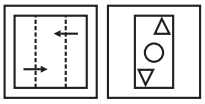
Answer Figures



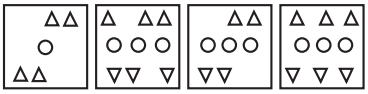
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figures



Answer Figures

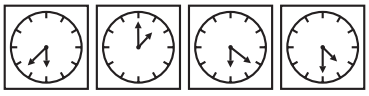


(1) (2) (3) (4)

24. If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

Question Figure

Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'P' can be represented by 02, 10, etc. and 'G' can be represented by 66, 98, etc. Similarly, you have to identify the set for the word 'TRAIL'.

Matrix-I

	0	1	2	3	4
0	I	T	P	R	U
1	P	R	U	I	T
2	T	I	R	U	P
3	R	U	T	P	I
4	U	P	I	T	R

Matrix-II

	5	6	7	8	9
5	G	A	L	H	S
6	H	G	S	A	L
7	A	L	G	S	H
8	S	H	A	L	G
9	L	S	H	G	A

(1) 01, 03, 75, 00, 68
(2) 14, 30, 68, 13, 58
(3) 20, 44, 99, 21, 96
(4) 43, 11, 56, 34, 88

PART-II
(GENERAL AWARENESS)

26. Which of the following rate is charged by banks to their most credit worthy customers?
(1) Prime Lending Rate
(2) Statutory Liquidity Rate
(3) Bank Rate
(4) Repo Rate

27. Medium term loans are provided for a period of .....
(1) 1 year to 2 years
(2) 15 months to 3 years
(3) 15 months to 4 years
(4) 1 year to 3 years

28. Which of the following is a feature of federal Government?
(1) Supremacy of Parliament
(2) Supremacy of Judiciary

(3) Division of powers between Federal and State Government
(4) Single Citizenship

29. Under which Article, President of India can proclaim financial emergency?
(1) Article 32 (2) Article 349
(3) Article 360 (4) Article 355

30. Who was the founder of the Ghadar Party?
(1) Basant Kumar Biswas
(2) Sohan Singh Bhakna
(3) Ram Prasad Bismil
(4) Bhagat Singh

31. In which year (in AD) was the East India Company established?
(1) 1664 AD (2) 1632 AD
(3) 1600 AD (4) 1608 AD

32. Himalayan mountain range falls under which type of mountains?
(1) Block Mountain
(2) Residual Mountain
(3) Accumulated Mountain
(4) Fold Mountain

33. 'Norwesters' are thunder storms which are prominent in ..... .
(1) India and Bhutan
(2) Bhutan and Nepal
(3) India and Bangladesh
(4) Bangladesh and Myanmar

34. UV rays coming from Sun, majorly causes which cancer?
(1) Lungs cancer (2) Liver cancer
(3) Mouth cancer (4) Skin cancer

35. Which of the following is the largest mammal?
(1) Whale (2) Rhinoceros
(3) Elephant (4) Human

36. What is the full form of RNA?
(1) Ribo Nucleic Acid
(2) Ribo Nitric Acid
(3) Ribo Nutrient Acid
(4) Reverse Nucleic Acid

37. At which of the following place, weight of an object is maximum?
(1) At poles
(2) At equator
(3) At tropic of capricorn
(4) At tropic of cancer

38. What is the S.I. unit of temperature?
(1) Kelvin (2) Joule
(3) Celsius (4) Fahrenheit

39. Netscape Navigator is a ..... .
(1) graphical user interface
(2) programming language
(3) web browser
(4) processor

40. What is nature of pH of Milk?
(1) Slightly Acidic
(2) Slightly Basic
(3) Highly Acidic
(4) Highly Basic

41. Which among the following is not an example of emulsion?
(1) Chocolate-Milk
(2) Butter
(3) Whipped Cream
(4) Curd

42. Kyoto Protocol's (an international treaty to reduce greenhouse gas emissions) first meeting was held at which country?
(1) USA (2) Germany
(3) Japan (4) Switzerland

43. 'Lucky Grahak Yojana' and 'Digi Dhan Vyapar Yojana' to give cash awards to the customers and merchants was launched by which government body?
(1) National Institution for Transforming India
(2) National Payments Corporation of India
(3) Financial Stability and Development Council
(4) Reserve Bank of India

44. Who among the following devised the technique IVF (In Vitro Fertilization)?
(1) Sir Frank Whittle
(2) Robert Edwards
(3) Edward Jenner
(4) Dr. Martin Cooper

45. 'Wimbledon' is a place associated with which of the following sports?
(1) Lawn tennis (2) Badminton
(3) Hockey (4) Cricket

46. Match the following.

	Artist		Art
1.	Yamini Krishna Murthy	a.	Vocalist
2.	M.S. Subbulakshmi	b.	Musician
3.	Vishnu Digambar Paluskar	c.	Bharat-natyam
4.	Pt. Shivkumar Sharma	d.	Santoor

(1) 1-c, 2-a, 3-b, 4-d
(2) 1-b, 2-a, 3-d, 4-c
(3) 1-d, 2-c, 3-b, 4-a
(4) 1-b, 2-c, 3-a, 4-d

47. Who is the recipient of Arjuna Award 2016 in the field of athletics?
(1) Vikas Gowda
(2) Lalita Babar
(3) Neeraj Chopra
(4) Seema Punia

48. 'Six Machine (I Don't Like Cricket ..... I Love It)' is an autobiography of which famous batsman?
(1) Virat Kohli
(2) AB De Velliers
(3) Chris Gayle
(4) Tillakaratne Dilshan

49. Which country is headed towards a confrontation over Gibraltar with Spain?
(1) France
(2) Morocco
(3) Germany
(4) United Kingdom

50. Which country has banned 'Facebook'?
(1) China (2) Bhutan
(3) Nepal (4) Pakistan

PART-III
(QUANTITATIVE APTITUDE)

51. A fraction becomes $\frac{6}{5}$ when 5 is added to its numerator and becomes $\frac{1}{2}$ when 4 is added to its denominator. What will be the value of the fraction?
(1) $\frac{8}{9}$ (2) $\frac{7}{10}$
(3) $\frac{7}{8}$ (4) $\frac{6}{11}$

52. Amit can complete a work in 25 days and Punit can complete the same work in 20 days. Punit alone worked at it for 10 days and then left the work. In how many days will Amit alone complete the remaining work?

(1) $11\frac{1}{2}$ days (2) $12\frac{1}{2}$ days

(3) $13\frac{1}{2}$ days (4) $14\frac{3}{2}$ days

53. The measure of the four successive angles of a quadrilateral are in the ratio 7 : 11 : 7 : 11. The quadrilateral is a ..... .

(1) trapezium (2) rectangle
(3) parallelogram (4) square

54. What is the discount percentage offered on a book having marked price ₹ 2,150/- being sold at ₹ 1,892/-?

(1) 12% (2) 13%
(3) 14% (4) 16%

55. ₹ 60,500/- is divided among A, B and C such that A receives $\frac{2}{9}$ as much as B and C together and B receives $\frac{3}{7}$ of as much as A and C together. What is the share of C (in ₹)?

(1) ₹ 29,850/- (2) ₹ 30,120/-
(3) ₹ 31,350/- (4) ₹ 37,250/-

56. The average age of a class of 6 girls is x years. Four new girls having ages $x - 2$, $x + 2$, $x + 4$ and $x + 6$ joins the class. What is the new average age (in years) of the class?

(1) $x + 1$ years (2) $x + 2$ years
(3) $2.5x$ years (4) $x + 2.5$ years

57. A dealer sells two machines at ₹ 12,000/- each. On one it gains 32% and on the other it looses 32%. What is its profit/loss percentage in the whole transaction?

(1) No gain and no loss
(2) 1% loss
(3) 18% profit
(4) 10.24% loss

58. How much water (in litres) must be added to 80 litres solution of milk and water containing 10% milk, so that it becomes a 5% milk solution?

(1) 10 litres (2) 20 litres
(3) 40 litres (4) 80 litres

59. A bus travels $\frac{2}{5}$ of a total journey at its usual speed. The remaining distance was covered by bus at $\frac{6}{7}$ of its usual speed. Due to slow speed it reaches its destination 50 minutes late. If the total distance is 200 km, then what is the usual speed (in km/h) of bus?

(1) 20.57 km/h (2) 24 km/h
(3) 28 km/h (4) 26.52 km/h

60. For an amount, simple interest at the rate of interest of 12% per annum for 6 years is ₹ 25,920/-. What will be the compound interest (in ₹) on same amount at the rate of interest of 8% per annum compounding annually for 2 years?

(1) ₹ 4326.3 (2) ₹ 5563.4
(3) ₹ 5888.6 (4) ₹ 5990.4

61. If α and β are roots of the equation $3x^2 - 13x + 14 = 0$, then what is the value of $\left(\frac{\alpha}{\beta}\right) + \left(\frac{\beta}{\alpha}\right)$?

(1) $\frac{65}{28}$ (2) $\frac{53}{14}$

(3) 9 (4) $\frac{85}{42}$

62. If $a + b + c = 9$ and $ab + bc + ca = 18$, then what is the value of $a^3 + b^3 + c^3 - 3abc$?

(1) 189 (2) 243
(3) 361 (4) 486

63. If $\left(\frac{x}{y}\right) + \left(\frac{y}{x}\right) = 1$, then what is the value of $x^3 + y^3$?

(1) – 1 (2) 0
(3) 1 (4) 3

64. If $5^x = 30^{-y} = 6^z$, then what is the value of $\frac{(xy + yz + zx)}{xyz}$?

(1) 0 (2) 1
(3) 2 (4) 3

65. The internal bisectors of $\angle Q$ and $\angle R$ of ΔPQR meet at O. If $\angle P = 70°$, then what is the measure of $\angle QOR$ (in degrees)?

(1) 110° (2) 115°
(3) 125° (4) 135°

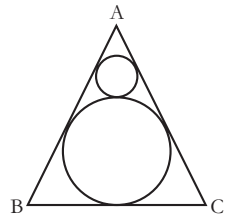
66. If the areas of two similar triangle are in the ratio 5 : 7, then what is the ratio of the corresponding sides of these two triangles?

(1) 5 : 7 (2) 25 : 49
(3) $\sqrt{5} : \sqrt{7}$ (4) 125 : 343

67. ABCD is an isosceles trapezium such that AD||BC, AB = 5 cm, AD = 8 cm and BC = 14 cm. What is the area (in cm^2) of trapezium?

(1) 36 cm^2 (2) 44 cm^2
(3) 88 cm^2 (4) 144 cm^2

68.



In the given figure, ABC is an equilateral triangle. If the area of bigger circle is 1386 cm^2, then what is the area (in cm^2) of smaller circle?

(1) 144 cm^2
(2) 154 cm^2
(3) 288 cm^2
(4) 462 cm^2

69. What is the simplified value of $\left[\frac{(\tan^2\theta - \sin^2\theta)}{\tan^2\theta \sin^2\theta}\right]$?

(1) – 1 (2) 0
(3) 1 (4) 2

70. If $\sec(3x - 20°) = \operatorname{cosec}(3y + 20°)$, then what is the value of $\tan(x + y)$?

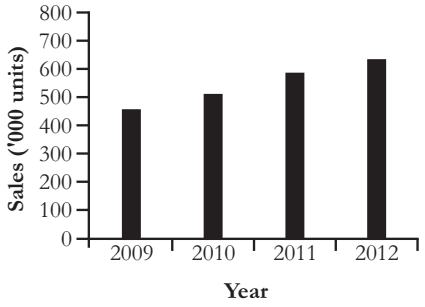
(1) 1 (2) $\sqrt{3}$

(3) $\frac{1}{\sqrt{3}}$ (4) $2\sqrt{3}$

71. If $\cot A = \frac{n}{(n+1)}$ and $\cot B = \frac{1}{(2n+1)}$, then what is the value of $\cot(A + B)$?

(1) – 1 (2) 0
(3) 1 (4) 2

Directions (72–75): The bar chart given below shows the sales of 3 types of cars in the Indian automotive industry over 4 years. All the sales figures have been shown in terms of '000 units.



72. Which of the following type of car has the highest increase in sales from 2009 to 2012?
(1) Hatchback
(2) Both SUV and Hatchback
(3) SUV
(4) Sedan

73. What is the simple annual growth rate (in %) in the sales of SUV from 2009 to 2012?
(1) 90% (2) 100%
(3) 133.33% (4) 150%

74. What is the respective ratio of total sales of Sedan and total sales of SUV over the period of 4 years?
(1) 23 : 31 (2) 29 : 39
(3) 43 : 31 (4) 76 : 47

75. If all the 3 categories increase by same rate in 2013 over 2012 as they did in 2012 over 2011, then what will be the total approximate sales (in '000 units) of all the 3 categories taken together in year 2013?
(1) 2152 (2) 2345
(3) 3069 (4) 3568

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. I was shocked to hear (1)/ that her husband (2)/ died of an accident. (3)/ No error (4)

77. The reason for (1)/ his failure is because (2)/ he didn't study at all. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. Virat Kohli added another feather ..... his cap by his wonderful performance in the one day match.
(1) in (2) to
(3) into (4) on

79. Only when ..... failed, the army resorted to force.
(1) efforts (2) arrests
(3) persuasions (4) manipulations

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Pernicious
(1) Beneficial (2) Dangerous
(3) Innocuous (4) Advantageous

81. Stringent
(1) Annoying (2) Revengeful
(3) Incidental (4) Rigorous

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Vexatious
(1) Calamitous
(2) Treachery
(3) Soothing
(4) Pliable

83. Burgeon
(1) Bolster (2) Shrivel
(3) Mount (4) Amplify

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. Live from hand to mouth
(1) Filthy rich people
(2) To be dependent on others
(3) To have enough money to live on and nothing extra
(4) Living in miserable conditions

85. To face the music
(1) To bear the consequences
(2) To disparage someone
(3) To be hard of hearing
(4) To enjoy a musical concert

Directions (86–87): Improve the **bold** part of the sentence.

86. He thanked me for what I **have done** for his wife.
(1) had done
(2) had been done
(3) have been done
(4) No improvement

87. **Hardly nothing** was offered to the victims of the earthquake.
(1) Hardly something
(2) Hardly anything
(3) Hardly little
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

88. Killing of one's own child
(1) Foeticide (2) Filicide
(3) Infanticide (4) Lupicide

89. A lover of work
(1) Oenophile
(2) Technophile
(3) Romanophile
(4) Ergophile

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Impression
(2) Personnal
(3) Terrorism
(4) Illiterate

91. (1) Stupefaction
(2) Preferential
(3) Surveillence
(4) Detrimental

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. P. It has been the handmaid of the ruling class.
Q. Therefore, ever since the dawn of civilization, persons in power have always tried to supervise or control education.
R. Education is an instrument which imparts knowledge and therefore, indirectly controls power.
S. It is an old saying that knowledge is power.
(1) SQPR (2) PRQS
(3) SRQP (4) PSQR

93. P. This is despite the fact that there is a rampant migration of rural families to urban centres.
Q. Generally the gains of being a unit of the urban population are less than the disadvantages and risks that are inbuilt in the urban life.
R. Rural population still dominates the urban population as far as the number is considered.
S. India is a country of villages.
(1) QRSP (2) RPQS
(3) SRQP (4) QPRS

94. In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
The residents celebrated Diwali.
(1) Celebration of Diwali was done by the residents.
(2) Diwali has been celebrated by the residents.
(3) Diwali was celebrated by the residents.
(4) Diwali is celebrated by the residents.

95. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
The foreman said to his workers "I cannot pay you higher wages."
(1) The foreman warned his workers that he cannot pay them higher wages.
(2) The foreman told his workers that he could not pay them higher wages.
(3) The foreman told his workers that they could not be paid higher wages.
(4) The foreman forbid his workers to pay higher wages.

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

It is not ...**(96)**... to ignore all allegations of both capturing and rigging as murmurs of ...**(97)**... losers. ...**(98)**... have come to light of intimidation of whole villages and communities to make them vote for a particular candidate or party. At times election officials have been ...**(99)**... by unscrupulous politicians into turning a blind eye to ...**(100)**... practices.

96. (1) realistic
(2) reliable
(3) required
(4) essential

97. (1) rational
(2) disgruntled
(3) huge
(4) idealist

98. (1) Instances
(2) Sources
(3) Reasons
(4) Ideas

99. (1) decided (2) safeguarded
(3) rejuvenated (4) threatened

100. (1) significant (2) rare
(3) unjust (4) usual

Short Answers

1. (4)	**2.** (1)	**3.** (1)	**4.** (4)	**5.** (4)	**6.** (3)	**7.** (2)	**8.** (2)	**9.** (4)	**10.** (4)
11. (3)	**12.** (1)	**13.** (1)	**14.** (3)	**15.** (2)	**16.** (3)	**17.** (3)	**18.** (3)	**19.** (4)	**20.** (4)
21. (1)	**22.** (3)	**23.** (2)	**24.** (4)	**25.** (4)	**26.** (1)	**27.** (4)	**28.** (3)	**29.** (3)	**30.** (2)
31. (3)	**32.** (4)	**33.** (3)	**34.** (4)	**35.** (1)	**36.** (1)	**37.** (1)	**38.** (1)	**39.** (3)	**40.** (1)
41. (4)	**42.** (3)	**43.** (1)	**44.** (2)	**45.** (1)	**46.** (1)	**47.** (2)	**48.** (3)	**49.** (4)	**50.** (1)
51. (2)	**52.** (2)	**53.** (3)	**54.** (1)	**55.** (3)	**56.** (1)	**57.** (4)	**58.** (4)	**59.** (2)	**60.** (4)
61. (4)	**62.** (2)	**63.** (2)	**64.** (1)	**65.** (3)	**66.** (3)	**67.** (2)	**68.** (2)	**69.** (3)	**70.** (3)
71. (1)	**72.** (3)	**73.** (3)	**74.** (3)	**75.** (3)	**76.** (3)	**77.** (2)	**78.** (2)	**79.** (3)	**80.** (2)
81. (4)	**82.** (3)	**83.** (2)	**84.** (3)	**85.** (1)	**86.** (1)	**87.** (2)	**88.** (2)	**89.** (4)	**90.** (2)
91. (3)	**92.** (3)	**93.** (3)	**94.** (3)	**95.** (2)	**96.** (1)	**97.** (2)	**98.** (1)	**99.** (4)	**100.** (3)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (4) As, 'Stick' is used in 'Hockey', similarly 'Gloves' are used in 'Boxing'.

2. (1) F S : L Y :: I V : **G T**

+13 +13 +13 +13

3. (1) As,

19 : 367 → 19 × 19 + 6 = 361 + 6 = 367

Similarly,

21 : 447 → 21 × 21 + 6 = 441 + 6 = 447

4. (4) Except Marsh, all others are water bodies.

5. (4) A J **P W**

+9 +7

E N N W

+9 +9

6. (3) 170 = 13 × 13 + 1

290 = 17 × 17 + 1

360 = 19 × 19 – 1

530 = 23 × 23 + 1

7. (2) Arrangement of the words as per English dictionary:

Effaceable (3) → Effacement (5) → Effacements (4) → Effacers (1) → Effacing (2)

8. (2) +19 +19 +19

C 11 V 17 O 23 H 31

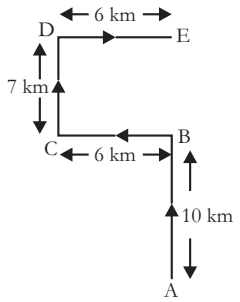
9. (4) 19 + 26 = 45

26 + 45 = 71

45 + 71 = 116

71 + 116 = 187

10. (4)



∴ Required distance = AE = 10 + 7 = 17 km.

11. (3) 13th letter from right end in the English alphabet = N

12. (1) The word 'HATS' cannot be formed using the letter of the given word because the word 'HANDSOME' does not have the letter 'T'.

13. (1) As, A C C O U N T

+3 +3 +3 +3 +3 +3 +3

D F F R X Q W

Similarly, M A T H S

P D W K V

14. (3) ? = 11 ÷ 6 – 2 + 5 × 3

? = 11 + 6 ÷ 2 × 5 – 3

? = 11 + 3 × 5 – 3

? = 11 + 15 – 3

? = 26 – 3 = 23

15. (2) 3 # 6 * 9 = 36 + 9 = 45

9 # 8 * 7 = 98 + 7 = 105

∴ 5 * 6 # 3 = 5 + 63 = 68

16. (3) (7 × 4 × 8) – (3 × 3 × 6)

= 224 – 54 = 170

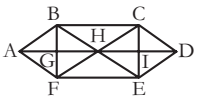
(3 × 4 × 9) – (5 × 2 × 3)

= 108 – 30 = 78

(3 × 2 × 8) – (4 × 3 × 1)

= 48 – 12 = 36 =?

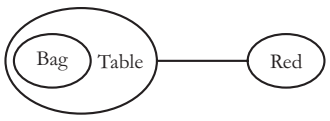
17. (3)



Triangles = AGB, AGF, AFB, HGB, HGF, HBF, HCB, HFE, HIC, HIE, HEC, CBF, CEF, ECB, EFB, DIC, DIE, DCE, BAH, FHA, CHD, EDH

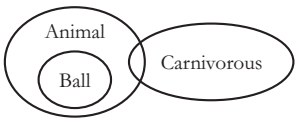
Number of triangles = 22

18. (3)



19. (4) Answer figure (4) is formed by folding the figure given in the question.

20. (4)



21. (1)

22. (3)

23. (2)

24. (4)

25. (4) T → 20, 01, 32, **43**, 14,

R → 30, **11**, 22, 03, 44

A → 75, **56**, 87, 68, 99

I → 00, 21, 42, 13, **34**

L → 95, 76, 57, **88**, 69

PART-II
(GENERAL AWARENESS)

26. (1) **Prime Lending Rate:** It is the interest rate charged by banks to their largest, most secure, and most credit worthy customers on short-term loans. This rate is used as a guide for computing interest rates for other borrowers.

27. (4) Bank offers loans for different period:

- Short-term loans of up to one year
- Medium-term loans between one and three years
- Long-term loans of over three years

28. (3) The feature of the federal system is the distribution of power between the federal government and the government of the states. The Indian Constitution made a clear division of power into three lists—the Union list, the State list, the Concurrent list.

29. (3) **Article 360:** It states that if the President is satisfied that a situation has arisen whereby the financial stability or the credit of India or any part thereof is

threatened, President may declare a state of financial emergency. A proclamation issued under Article 360 will remain in force for two months unless before the expiry of the period it is approved by both the Houses of the Parliament.

30. (2) Lala Hardayal, Sohan Singh Bhakkna and Taraknath Das were the founders of Gadar party founded in 1913 and it's headquarter was in San Francisco.

31. (3) On 31 December 1600, a group of merchants who had incorporated themselves into the East India Company were given monopoly privileges on all trade with the East Indies. The Company's ships first arrived in India, at the port of Surat, in 1608. Sir Thomas Roe reached the court of the Mughal Emperor, Jahangir, as the emissary of King James I in 1615, and gained for the British the right to establish a factory at Surat.

32. (4) **Fold Mountains:** Created where two or more of Earth's tectonic plates are pushed together. The rugged, soaring heights of the Himalayas, Andes and Alps are all active fold mountains.

33. (3) **Norwesters (Kalbaishakhi):** It is a local rain fall and thunderstorm which occurs in India and Bangladesh. Kalbaishakhi occurs, with increasing frequency, from March till monsoon establishes over North-East India.

34. (4) **Ultraviolet (UV) Radiation:** It is a type of energy produced by the sun and some artificial sources, such as solariums. The sun's ultraviolet (UV) radiation is the main cause of skin cancer. UV damage also causes sunburn, tanning, premature ageing and eye damage.

35. (1) **Blue Whale:** It is the largest living mammal (and animal species) on this earth. In terms of size the blue whale can grow to lengths of over 90 feet long and weigh more than 150 tons.

36. (1) **Ribonucleic Acid (RNA):** It is a single-stranded molecule that plays a vital role in coding, decoding, regulation and expression of genes.

37. (1) Weight of a body is greater at pole than at the equator.

38. (1) Celsius is currently a derived unit for temperature in the SI system, Kelvin being the base unit. The abbreviation of Celsius is ºC (degree Celsius) and the size of one Celsius degree is the same size as one kelvin.

39. (3) **Netscape Navigator:** It was the first commercially successful Web browser.

40. (1) Acidic and basic are two extremes that describe chemical property. The pH scale measures how acidic or basic a substance is. The pH scale ranges from 0 to 14. A pH of 7 is neutral. A pH less than 7 is acidic. A pH greater than 7 is basic. Milk has a pH of around 6.5 to 6.7, which makes it slightly acidic.

41. (4) The milk fat is suspended in the water as fine droplets, which makes it an emulsion. The result of process of milk coagulation, or curdling, is a gelatinous material called curd.

42. (3) The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February, 2005. It was the first international agreement in which many of the world's industrial nations concluded a verifiable agreement to reduce their emissions of six greenhouse gases in order to prevent global warming.

43. (1) NITI Aayog launched the schemes, Lucky Grahak Yojana and Digi-Dhan Vyapar Yojana for incentivising digital payment in December 2016. The primary aim of these schemes was to incentivise digital transactions so that electronic payments are adopted by all sections of the society, especially the poor and the middle class.

44. (2) Robert Edwards, the British scientist who pioneered IVF, was responsible for the conception of Louise Brown, the world's first test-tube baby. He got Nobel Prize for physiology or medicine in 2010.

45. (1) Wimbledon is one of the four Grand Slam tennis tournaments, the others being the Australian Open, the French Open and the US Open.

46. (1)

Artist	Art
Yamini Krishna Murthy	Bharatnatyam
M.S. Subbulakshmi	Vocalist
Vishnu Digambar Paluskar	Musician
Pt. Shiv Kumar Sharma	Santoor

47. (2) Lalita Babar is the recipient of Arjuna Award 2016 in the field of athletics. She won gold at the Incheon games in South Korea in 2014.

48. (3) **Six Machine:** "I Don't Like Cricket ... I Love It" is the title of Chris Gayle's autobiography. In 2012 he became the first player to hit a six off the first ball of a Test match.

49. (4) Spain and the United Kingdom headed towards a confrontation over Gibraltar. The seizure of Gibraltar by a joint Dutch-British force in 1704 came as Britain took over from Spain as Europe's strongest imperial nation. Possession was sealed in the Treaty of Utrecht in 1713.

50. (1) In China, Facebook was blocked following the July 2009 Urumqi riots because Xinjiang independence activists were using Facebook as part of their communications network.

PART-III
(QUANTITATIVE APTITUDE)

51. (2) Numerator and Denominator of the fraction = x and y

According to question,

$$\frac{x+5}{y} = \frac{6}{5}$$

$$5x + 25 = 6y$$

$$5x - 6y = 25 \quad \text{... (i)}$$

$$\frac{x}{x+4} = \frac{1}{2}$$

$$2x = y + 4$$

$$2x - y = 4 \quad \text{... (ii)}$$

on solving equations (i) and (ii),

$$x = 7, y = 10$$

$\therefore$ Required fraction = $\frac{x}{y} = \frac{7}{10}$

52. (2) Amit will complete the remaining work in = x days

According to question,

$$\frac{x}{25}+\frac{10}{20}=1$$

or, $$\frac{x}{25}=1-\frac{1}{2}=\frac{1}{2}$$

$$\therefore \quad x=\frac{25}{2}=12\frac{1}{2}\text{ days}$$

53. (3) $7x + 11x + 7x + 11x = 360°$

$36x = 360° \Rightarrow x = 10°$

Angles of quadrilateral 70°, 110°, 70°, 110°

Hence, it is parallelogram because the opposite angles of a parallelogram are equal or sum of adjacent angles is 180°.

54. (1) Discount = x %

According to question,

$$2150\times\frac{(100-x)}{100}=1892$$

or, $$215\times(100-x)=18920$$

or, $$215x=21500-18920$$

$$\therefore \quad x=\frac{2580}{215}=12\%$$

55. (3) According to question,

$$A+B+C=60500 \quad \text{... (i)}$$

$$A=(B+C)\times\frac{2}{9}$$

$$9A=2(B+C)$$

$$B+C=\frac{9A}{2}$$

From equation (i),

$$A+\frac{9A}{2}=60500$$

$$\frac{11A}{2}=60500$$

$$A=11000$$

$$B=(A+C)\times\frac{3}{7}$$

$$\frac{7B}{3}=A+C \quad \text{.... (ii)}$$

From equation (ii),

$$\frac{7B}{3}+B=60500$$

$$\frac{10B}{3}=60500$$

$$B=18150$$

$C = 60500 – (A + B)$

$C = 60500 – (11000 + 18150)$

$C = 60500 – 29150 = ₹\ 31,350/-$

56. (1) New average age

$$=\frac{6x+x-2+x+2+x+4+x+6}{10}$$

$$=\frac{10x+10}{10}=x+1$$

57. (4) Cost price of the first machine

$$=12000\times\frac{100}{132}$$

$$=9090.90$$

Cost price of the second machine

$$=12000\times\frac{100}{68}$$

$$=17647.05$$

Total cost price

$$=9090.90+17647.05$$

$$=26737.95$$

$$\text{Loss}=26737.95-2\times12000$$

$$=2737.95$$

Loss percentage

$$=\frac{2737.95}{26737.95}\times100$$

$$=10.24\%$$

58. (4) The quantity of milk in the mixture $= 80\times\frac{10}{100}=8$ litres

The quantity of water in the mixture

$$=80-8=72\text{ litres}$$

Let, add x litres of water

According to question,

$$\frac{8}{72+x}=\frac{5}{95}$$

or, $$8\times19=72+x$$

$$\therefore \quad x=152-72=80\text{ litres}$$

59. (2) Usual speed of bus = v km/h

According to question,

$$\frac{200\times\frac{2}{5}}{v}+\frac{200\times\frac{3}{5}}{v\times\frac{6}{7}}-\frac{200}{v}=\frac{50}{60}$$

or, $$\frac{80}{v}+\frac{120\times7}{6v}-\frac{200}{v}=\frac{5}{6}$$

or, $$\frac{480+840-1200}{6v}=\frac{5}{6}$$

$$\therefore \quad 120=5v$$

$$v=24\text{ km/h}$$

60. (4) Principal = P

$$\frac{P\times12\times16}{100}=25920$$

$$P=36000$$

Compound interest

$$=36000\left[\left(1+\frac{8}{100}\right)^2-1\right]$$

$$=36000\left[\left(\frac{27}{25}\right)^2-1\right]$$

$$=36000\left[\frac{729-625}{625}\right]$$

$$=36000\times\frac{104}{625}$$

$$=₹\ 5,990.4$$

61. (4) $3x^2 – 13x + 14 = 0$

$$\alpha+\beta=-\frac{b}{c}=\frac{13}{3} \quad \text{... (i)}$$

$$\alpha\beta=\frac{c}{a}=\frac{14}{3}$$

$$\alpha-\beta=\sqrt{(\alpha+\beta)^2-4\alpha\beta}$$

$$\alpha+\beta=\sqrt{\left(\frac{13}{3}\right)^2-4\times\frac{14}{3}}$$

$$=\sqrt{\frac{169}{9}-\frac{56\times3}{9}}$$

$$\alpha-\beta=\sqrt{\frac{169-168}{9}}$$

$$=\sqrt{\frac{1}{9}}$$

$$\alpha-\beta=\frac{1}{3} \quad \text{... (ii)}$$

On solving equations (i) and (ii),

$$\alpha=\frac{7}{3},\ \beta=2$$

$$\frac{\alpha}{\beta}+\frac{\beta}{\alpha}=\frac{7}{3\times2}+\frac{2\times3}{7}$$

$$=\frac{7}{6}+\frac{6}{7}=\frac{49+36}{42}$$

$$=\frac{85}{42}$$

62. (2) $a + b + c = 9$

$ab + bc + ca = 18$

$(a + b + c)^2 = (9)^2$

$a^2 + b^2 + c^2 + 2(ab + bc + ca) = 81$

$a^2 + b^2 + c^2 + 2 \times 18 = 81$

$a^2 + b^2 + c^2 = 81 – 36$

$= 45$

$a^3 + b^3 + c^3 – 3abc = (a + b + c)$

$[a^2 + b^2 + c^2 – ab – bc – ca]$

$= 9[45 – 18]$

$= 9 \times 27 = 243$

63. (2) $\frac{x}{y}+\frac{y}{x}=1$

$x^2 + y^2 = xy$

$x^2 + y^2 – xy = 0$

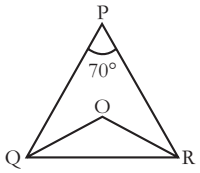
$$x^3 + y^3 = (x + y)(x^2 + y^2 - xy)$$
$$= (x + y) \times 0 = 0$$

64. (1) $5^x = 30^{-y} = 6^y = k$

$$5 = (k)^{\frac{1}{x}},\ 30 = (k)^{-\frac{1}{y}},\ 6 = (k)^{\frac{1}{z}}$$
$$5 \times 6 = 30$$
or, $(k)^{\frac{1}{x}} \times (k)^{\frac{1}{z}} = (k)^{-\frac{1}{y}}$
or, $(k)^{\frac{1}{x}+\frac{1}{z}} = (k)^{-\frac{1}{y}}$
or, $\frac{1}{x} + \frac{1}{z} = -\frac{1}{y}$
or, $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 0$
$\therefore \quad \frac{xy + yz + zx}{xyz} = 0$

65. (3) $\angle QPR = 70°$

$\because \quad \angle QOR = 90° + \frac{\angle QPR}{2}$

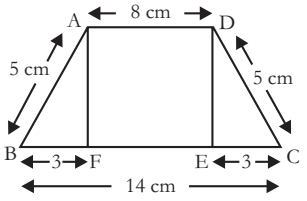


$$\angle QOR = 90° + \frac{70°}{2}$$
$$= 90° + 35°$$
$$\angle QOR = 125°$$

66. (3) The ratio of the sides of the similar triangles

$= \sqrt{\text{The ratio of the areas of the similar triangles}}$
$= \sqrt{5} : \sqrt{7}$

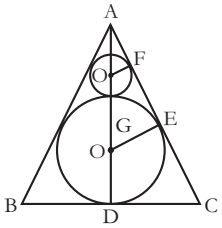
67. (2) AB = DC = 5 cm
AD = 8 cm
BC = 14 cm



In ΔADE,
$(DE)^2 = (DC)^2 - (EC)^2$
$(DE)^2 = (5)^2 - (3)^2$
$(DE)^2 = 25 - 9 = 16$
DE = 4 cm
The area of trapezium ABCD

$$= \frac{1}{2}(8 + 14) \times 4$$
$$= \frac{1}{2} \times 22 \times 4$$
$$= 22 \times 2 = 44 \text{ cm}^2$$

68. (2)



OE = R
$\therefore \quad \pi R^2 = 1386 \Rightarrow \frac{22}{7} R^2$
$= 1386$
or, $R^2 = \frac{1386 \times 7}{22} = 441$
or, $R = \sqrt{441} = 21$ cm.
$\therefore \quad OQ = 2R = 42$ cm.
$\Delta AFO' \sim \angle AEO$
$O'F \perp AF$
$\therefore$ In $\Delta AO'F$,

$$\sin 30° = \frac{O'F}{AO'} \Rightarrow \frac{1}{2} = \frac{r}{AO'}$$
or, $AO' = 2r$
$\therefore \quad OA = 42 \Rightarrow 2r + r + R$
$= 42$
or, $3r = 21 \Rightarrow r = 7$ cm.
$\therefore$ Area of smaller circle $= \pi r^2$
$= \frac{22}{7} \times 7 \times 7$
$= 154$ sq. cm.

69. (3) $\frac{\tan^2\theta - \sin^2\theta}{\tan^2\theta . \sin^2\theta} = \frac{1}{\sin^2\theta} - \frac{1}{\tan^2\theta}$

$$= \frac{1}{\sin^2\theta} - \frac{\cos^2\theta}{\sin^2\theta}$$
$$= \frac{1 - \cos^2\theta}{\sin^2\theta} = \frac{\sin^2\theta}{\sin^2\theta}$$
$$= 1$$

70. (3) $\sec(3x - 20°) = \text{cosec}(3y + 20°)$
$\sec(3x - 20°) = \text{cosec}(90° - 3y - 20°)$
$3x - 20° = 90° - 3y - 20°$
$3x + 3y = 90°$
$x + y = 30°$
$\tan(x + y) = \tan 30° = \frac{1}{\sqrt{3}}$

71. (1) $\text{Cot A} = \frac{n}{n+1}$, $\cot B = \frac{1}{2n+1}$

$$\cot(A + B) = \frac{\cot A \cot B - 1}{\cot A + \cot B}$$
$$= \frac{\frac{n}{n+1} \times \frac{1}{2n+1} - 1}{\frac{n}{n+1} + \frac{1}{2n+1}}$$
$$= \frac{n - (n+1)(2n+1)}{n(2n+1) + n + 1}$$
$$= \frac{n - 2n^2 - n - 2n - 1}{2n^2 + n + n + 1}$$
$$= \frac{-2n^2 - 2n - 1}{2n^2 + 2n + 1}$$
$$= -\frac{(2n^2 + 2n + 1)}{(2n^2 + 2n + 1)}$$
$$= -1$$

72. (3) Increase in sales of Hatchback

$$= \frac{800 - 500}{500} \times 100$$
$$= 60\%$$

Increase in sales of Sedan

$$= \frac{625 - 450}{450} \times 100$$
$$= 38.89\%$$

Increase in sales of SUV

$$= \frac{750 - 150}{150} \times 100$$
$$= 400\%$$

73. (3) Simple annual growth rate = r%
According to question,

$$\frac{150 \times r \times 3}{100} = 750 - 150 = 600$$
$$r = \frac{400}{3} = 133.33\%$$

74. (3) Total sale of Sedan
= 450 + 500 + 575 + 625 = 2150
Total sale of SUV
= 150 + 250 + 400 + 750 = 1550
Required ratio = 2150 : 1550
= 43 : 31

75. (3) Increase in 2011 to 2012

$$\text{Hatchback} = \frac{800 - 650}{650} \times 100$$
$$= 23.07\%$$
$$\text{Sedan} = \frac{625 - 575}{575} \times 100$$
$$= 8.69\%$$
$$\text{SUV} = \frac{750 - 400}{400} \times 100$$
$$= 87.5\%$$

Increase in 2012 to 2013

$$\text{Hatchback} = 800 \times \frac{123.07}{100}$$

$$= 954.56 \approx 985$$

$$\text{Sedan} = 625 \times \frac{108.69}{100}$$

$$= 679.312 \approx 679$$

$$\text{SUV} = 750 \times \frac{187.5}{100}$$

$$= 1406.25 \approx 1406$$

Total approximate sales in 2013

$$= 985 + 679 + 1406$$

$$= 3069$$

PART-IV (ENGLISH LANGUAGE)

76. (3) In the given sentence part (3) has an error. To correct the sentence use 'died in' in place of 'died of'.

77. (2) In the given sentence part (2) has an error. To correct the sentence use 'that' in place of 'because'.

78. (2) **Add a feather to one's cap (idiomatic expression):** to gain success, achievement and accomplishment.

79. (3) **Persuasion (Noun):** the act of convincing.

80. (2) **Pernicious/Dangerous (Adjective):** harmful; damaging.

Sentence → The pernicious influences of the mass media.

81. (4) **Stringent/Rigorous (Adjective):** strict; firm; rigid.

Sentence → Stringent laws can work wonders.

82. (3) Opposite of Vexations is

Soothing (Adjective): having a gently calming effect.

Sentence → She put on some soothing music.

83. (2) Opposite of Burgeon is

Shrivel (Verb): Wrinkle; wither; shrink.

Sentence → The flowers simply shrivelled up.

84. (3) To have enough money to live on and nothing extra.

Sentence → He belongs to an ordinary family. He lives from hand to mouth.

85. (1) To bear the consequences.

Sentence → Amardeep did not do his homework and so, he faced the music.

86. (1) For improvement of sentence use 'had done' in place of 'have done'.

87. (2) For improvement of sentence use 'hardly anything' in place of 'hardly nothing'.

88. (2) Best substitute of the sentence is **Filicide (Noun):** a person who kills their son or daughter.

89. (4) Best substitute of the sentence is **Ergophile (Noun):** a person who loves to work.

90. (2) Correctly spelt word → Personnel.

91. (3) Correctly spelt word → Surveillance.

92. (3) Logical order of the sentences to form a coherent paragraph → SRQP

93. (3) Logical order of the sentences to form a coherent paragraph → SRQP

94. (3) Passive/Active Voice

Diwali was celebrated by the residents.

Active voice of simple past tense.

95. (2) Indirect/Direct Speech

The foreman told his workers that he could not pay them higher wages.

Direct speech of an assertive sentence which consists of a modal verb.

96. (1) Best option for blank → **Realistic (Adjective):** sensible; commonsensical.

97. (2) Best option for blank → **Disgruntled (Adjective):** dissatisfied; resentful.

98. (1) Best option for blank → **Instance (Noun):** example; occasion; case; occurrence.

99. (4) Best option for blank → **Threaten (Verb):** intimidate; pressurise.

100. (3) Best option for blank → **Unjust (Adjective):** biased; unfair; wrongful; wrong.

❑❑❑

13 SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 11 August, 2017 (II)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Pressure : Barometer : : ? : Odometer
(1) Humidity (2) Distance
(3) Thickness (4) Wind

2. AEDM : ZQRN : : FLMO: ?
(1) BZYS (2) CZYS
(3) SZYB (4) YZBC

3. 243 : 578 : : 163 : ?
(1) 291 (2) 326
(3) 347 (4) 443

Directions (4–6): In the following questions, find the odd word/letter/number pair from the given alternatives.

4. (1) Flower (2) Fruit
(3) Leaves (4) Root

5. (1) CEAC (2) FHDF
(3) PRMP (4) TVRT

6. (1) 2132 – 161 (2) 2678 – 672
(3) 4325 – 120 (4) 6931 – 162

7. Arrange the given words in the sequence in which they occur in the dictionary.
1. Dillydallying 2. Dillydallied
3. Dillydally 4. Dilled
5. Dillydallies
(1) 42351 (2) 42531
(3) 45312 (4) 45321

8. In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
l m _ o _ n m _ l _ n _ _ n m l
(1) molnon (2) nolmoo
(3) nomloo (4) noolmm

9. In the following question, select the missing number from the given series.
21, 25, 52, 68, 193, ?
(1) 229 (2) 242
(3) 257 (4) 409

10. Kamal starts walking from his home facing west direction. After walking 10 km he takes a right turn and walks another 10 km. He takes another right turn and walks 10 km to reach his school. How far (in km) and in which direction is he from his home?
(1) 10, North
(2) 10, South
(3) 20, North-East
(4) 20, South-West

11. In a class, P has more marks than Q and R does not have the least marks. S has more marks than T and T has more marks than P, who among them will have the least marks?
(1) P (2) Q
(3) S (4) T

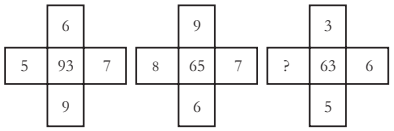
12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
RECIPROCATE
(1) PROCEED (2) RACE
(3) REPEAT (4) TEAR

13. In a certain code language, "CASIO" is written as "3119915". How is "CITIZEN" written in that code language?
(1) 295629134 (2) 3192295614
(3) 3912659214 (4) 3920926514

14. In the following question, correct the equation by interchanging the two signs.
6 ÷ 17 × 51 + 6 – 12 = – 4
(1) × and ÷ (2) + and ÷
(3) + and – (4) – and ÷

15. If 6 * 9 – 4 = 58 and 3 * 9 – 7 = 34, then in the expression A * 4 – 9 = 91, what is the value of 'A'?
(1) 6.5 (2) 17.5
(3) 20.5 (4) 30.5

16. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.



(1) 4 (2) 6
(3) 8 (4) 16

17. How many triangles are there in the given figure?

(1) 4 (2) 5
(3) 6 (4) 7

18. In the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements?

Statements:
Some staplers are pins.
All pins are markers.

Conclusions:

I. Some staplers are markers.

II. All markers are pins.

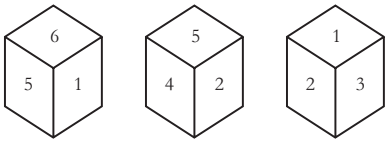
(1) Only conclusion I follows

(2) Only conclusion II follows

(3) Neither conclusion I nor II follows

(4) Both conclusions follow

19. Two positions of a cube are shown below. What will come opposite to face containing '4'?

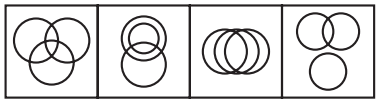


(1) 1 (2) 2

(3) 3 (4) 6

20. Identify the diagram that best represents the relationship among the given classes.

Green, Mango, Fruits

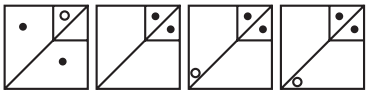


(1) (2) (3) (4)

21. Which answer figure will complete the pattern in the question figure?

Question Figure

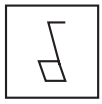
Answer Figures



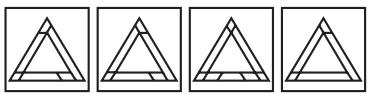
(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure



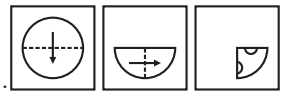
Answer Figures



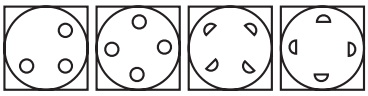
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figures



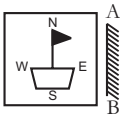
Answer Figures



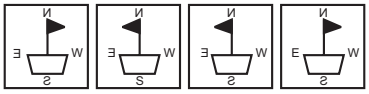
(1) (2) (3) (4)

24. If a mirror is placed on the line AB, then which of the answer figure is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'A' can be represented by 20, 43 etc., and 'U' can be represented by 68, 87 etc. Similarly, you have to identify the set for the word "GUIDE".

Matrix-I

	0	1	2	3	4
0	G	L	A	R	E
1	L	A	R	E	G
2	A	R	E	G	L
3	R	E	G	L	A
4	E	G	L	A	R

Matrix-II

	5	6	7	8	9
5	B	U	I	L	D
6	L	D	B	U	I
7	U	I	L	D	B
8	D	B	U	I	L
9	I	L	D	B	U

(1) 00, 68, 95, 58, 04

(2) 14, 75, 88, 87, 40

(3) 23, 99, 76, 78, 31

(4) 41, 87, 57, 66, 12

PART-II (GENERAL AWARENESS)

26. In which market form, a market or industry is dominated by a few firms?

(1) Perfect Competition

(2) Monopoly

(3) Oligopoly

(4) Monopolistic

27. Which amongst the following is not a component of monetary policy in India?

(1) Repo Rate

(2) Moral Suasion

(3) Credit Rationing

(4) Public Debt

28. Who among the following is not a member of any of the two houses of our country?

(1) Prime Minister

(2) Finance Minister

(3) President

(4) Railway Minister

29. Which article of Indian constitution has the provision for National Emergency?
(1) Article 350 (2) Article 352
(3) Article 312 (4) Article 280

30. Who led the Bardoli Satyagraha movement?
(1) Mahatma Gandhi
(2) Rabindra Nath Tagore
(3) Sardar Vallabhbhai Patel
(4) Chittaranjan Das

31. Who is known as the 'Father of Indian Unrest'?
(1) Anant Singh
(2) Bal Gangadhar Tilak
(3) Bhagat Singh
(4) Dadabhai Naoroji

32. Which of the following region is covered by tropical evergreen forest?
(1) Eastern Ghat
(2) Vindhyachal
(3) Aravalli
(4) Western Ghat

33. The final boundary between the Earth and the outer space is called ..... .
(1) Magnetosphere
(2) Ionosphere
(3) Mesopause
(4) Magnetopause

34. What is the name of the hormone produced by thymus gland?
(1) Thyroxine (2) Auxins
(3) Cytokinins (4) Thymosin

35. Photosynthesis takes place in the presence of chlorophyll and ..... .
(1) Water
(2) Nutrients
(3) Carbon-dioxide
(4) Sunlight

36. Which blood group is universal acceptor?
(1) O+ (2) O–
(3) AB– (4) AB+

37. If objects appear enlarged and inverted in a rear view mirror, then which type of mirror is used?
(1) Concave (2) Convex
(3) Cylindrical (4) Plane

38. Soap bubble attains spherical shape due to ..... .
(1) Inertia
(2) Pressure
(3) Surface Tension
(4) Viscosity

39. CAD stands for ..... .
(1) Common Aided Design
(2) Computer Aided Design
(3) Complex Aided Design
(4) Communication Aided Design

40. Which of the following is a characteristic of an exothermic reaction?
(1) Release of heat
(2) Absorption of heat
(3) Doesn't involve any change in temperature
(4) None of the option is correct

41. What is the chemical formula for Sodium Chloride (Salt)?
(1) $NaCl_2$ (2) NaCl
(3) Na_2Cl (4) Na_2C

42. Which of the following gas contributes the maximum to the phenomena of global warming?
(1) Methane
(2) Chlorofluorocarbon (CFC)
(3) Nitrogen dioxide
(4) Carbon dioxide

43. Who selects the Social Audit Committee under MGNREGA Scheme?
(1) Chief Minister
(2) Gram Sabha
(3) Mayor
(4) B.D.O.

44. Which of the following was invented by Sir Humphry Davy?
(1) Safety Pin
(2) Steam Engine
(3) Safety Lamp
(4) X-Rays

45. Who has won the 2016 Men's Single title at U.S. Open?
(1) Novak Djokovic
(2) Rafael Nadal
(3) Stan Wawrinka
(4) Andy Murray

46. Match the following.

	Dancer		Dance
1.	Radha Reddy	a.	Bharatnatyam
2.	Padma Subrahmanyam	b.	Kathak
3.	Sitara Devi	c.	Kuchipudi

(1) 1-b, 2-a, 3-c (2) 1-c, 2-b, 3-a
(3) 1-c, 2-a, 3-b (4) 1-a, 2-c, 3-b

47. Who has recently been awarded with Nobel Prize for peace in 2016?
(1) Juan Manuel Santos
(2) Henry Dunant
(3) Kailash Satyarthi
(4) Malala Yousefzai

48. Which of the following is a book written by Shashi Tharoor?
(1) It's Not About You
(2) Invisible People
(3) An Era of Darkness
(4) Democrats and Dissenters

49. With which country India has recently decided to partner with for strategic storage of crude oil in southern India?
(1) Iran
(2) Iraq
(3) United Arab Emirates
(4) United States of America

50. Which neighbouring country of India is also referred as 'Dauk Yul'?
(1) Myanmar (2) Maldives
(3) Bhutan (4) Afghanistan

PART-III
(QUANTITATIVE APTITUDE)

51. How many numbers are there between 1 to 200 which are divisible by 3 but not by 7?
(1) 38 (2) 45
(3) 57 (4) 66

52. 10 women can do a piece of work in 6 days, 6 men can do same work in 5 days and 8 children can do it in 10 days. What is the ratio of the efficiency of a women, a man and a child respectively?
(1) 4 : 6 : 3 (2) 4 : 5 : 3
(3) 2 : 4 : 3 (4) 4 : 8 : 3

53. The ratio of the volume of two cylinders is 7 : 3 and the ratio of their heights is 7 : 9. If the area of the base of the second cylinder is 154 cm^2, then what will be the radius (in cm) of the first cylinder?
(1) $6\sqrt{2}$ cm (2) $6\sqrt{3}$ cm
(3) $7\sqrt{2}$ cm (4) $7\sqrt{3}$ cm

54. Kanchan bought a clock with 25% discount on marked price. She sold it with 75% gain on the price she bought. What was her profit percentage on the marked price?
(1) 31.25% (2) 50%
(3) 56.25% (4) 60%

55. A, B and C received an amount of ₹ 8,400/- and distributed among themselves in the ratio of 6 : 8 : 7 respectively. If they save in the ratio of 3 : 2 : 4 respectively and B saves ₹ 400/-, then what is the ratio of the expenditures of A, B and C respectively?
(1) 6 : 8 : 7 (2) 8 : 6 : 7
(3) 9 : 14 : 10 (4) 12 : 7 : 9

56. The average age of 24 students is 12 years. It was observed that while calculating the average age, the age of a student was taken as 14 years instead of 8 years. What will be the correct average age (in years)?
(1) 11.25 years (2) 11.5 years
(3) 11.75 years (4) 12.25 years

57. 70% of the cost price of an article is equal to the 40% of its selling price. What is the profit or loss percentage?
(1) 63% loss (2) 70% loss
(3) 75% profit (4) 80% profit

58. a% of $b + b$% of a = ...
(1) $2a$% of b (2) $2a$% of $2b$
(3) $2a$% of $2a$ (4) $2b$% of $2b$

59. If I walk at $\frac{7}{6}$ of my usual speed, then I reach my office 15 minutes early. What is the usual time taken (in minutes) by me to reach the office?
(1) 60 min (2) 75 min
(3) 90 min (4) 105 min

60. A person lent ₹ 10,000/- to B for 3 years and ₹ 6,000/- to C for 4 years on simple interest at same rate of interest and received ₹ 5,400/- in all from both of them as interest. What is the rate of interest (in %)?
(1) 10% (2) 12.5%
(3) 15% (4) 20%

61. If $x^3 + 2x^2 - 5x + k$ is divisible by $x + 1$, then what is the value of k?
(1) – 6 (2) – 1
(3) 0 (4) 6

62. If $3x + \left[\frac{1}{(5x)}\right] = 7$, then what is the value of $\frac{5x}{(15x^2 + 15x + 1)}$?
(1) $\frac{1}{5}$ (2) $\frac{1}{10}$
(3) $\frac{2}{5}$ (4) 10

63. If $x + \left[\frac{1}{(4x)}\right] = \frac{5}{2}$, then what is the value of $\frac{(64x^6 + 1)}{8x^3}$?
(1) 110 (2) 115
(3) 125 (4) 140

64. If $x^2 + x = 19$, then what is the value of $(x + 5)^2 + \left[\frac{1}{(x + 5)^2}\right]$?
(1) 77 (2) 79
(3) 81 (4) 83

65. In ΔABC, AD, BE and CF are the medians intersecting at point G and area of ΔABC is 156 cm^2. What is the area (in cm^2) of ΔFGE?
(1) 13 cm^2 (2) 26 cm^2
(3) 39 cm^2 (4) 52 cm^2

66. In ΔABC, ∠ABC = 15°. D is a point on BC such that AD = BD. What is the measure of ∠ADC (in degrees)?
(1) 15° (2) 30°
(3) 45° (4) 60°

67. The length of diagonal of a square is $9\sqrt{2}$ cm. The square is reshaped to form a triangle. What is the area (in cm^2) of largest incircle that can be formed in that triangle?
(1) 6π cm^2 (2) 9π cm^2
(3) 12π cm^2 (4) 15π cm^2

68. The length of the common chord of two intersecting circles is 12 cm. If the diameters of the circles are 15 cm and 13 cm, then what is the distance (in cm) between their centers?
(1) $\frac{7}{2}$ cm (2) 7 cm
(3) $7\sqrt{2}$ cm (4) 14 cm

69. What is the simplified value of $\sec^4\theta - \sec^2\theta \tan^2\theta$?
(1) $\text{cosec}^2\theta$ (2) $\sec^2\theta$
(3) $\cot^2\theta$ (4) $\sec\theta \tan\theta$

70. What is the simplified value of (sin A – cosec A) (sec A – cos A) (tan A + cot A)?
(1) 1 (2) – 1
(3) 0 (4) 2

71. If $\left(\frac{1}{\cos\theta}\right) - \left(\frac{1}{\cot\theta}\right) = \frac{1}{P}$, then what is the value of cos θ?
(1) $\frac{(P + 1)}{(P - 1)}$ (2) $\frac{(P^2 + 1)}{2P}$
(3) $\frac{2(P^2 + 1)}{P}$ (4) $\frac{2P}{(P^2 + 1)}$

Directions (72–75): The table given below represents the production and sales of wheat in 4 different countries A, B, C and D over a period of 4 years. At the end of year 2010 A, B, C and D had a stock of 5200, 3500, 7835 and 1956 (in '000 quintals) of wheat respectively. For any given year, the stock of wheat is calculated as:

Stock of year (ν + 1) = stock at end of year (ν) + production in year (ν + 1) – sales in year (ν + 1) And, Surplus of year (ν) = production in year (ν) – sales in year (ν)

Year	Wheat production and sales (in '000 quintal)							
	Country A		Country B		Country C		Country D	
	Prod.	Sales	Prod.	Sales	Prod.	Sales	Prod.	Sales
2011	1218	1413	1881	1798	2035	2247	3126	2417
2012	1554	1783	2067	2389	1821	2018	2987	2911
2013	1671	1641	1328	2063	1937	2563	2143	3188
2014	1103	1002	1578	1239	3014	2988	4126	3563

72. What is the surplus (in '000 Quintal) of Country A of years 2013 and 2014 taken together?
(1) 122 (2) 131
(3) 143 (4) 158

73. What is the stock (in '000 quintal) of Country C at end of 4 year period?
(1) 5926 (2) 6213
(3) 6826 (4) 8844

74. What is the difference (in '000 quintal) in average production and average sales respectively of Country C in the given four years?
(1) – 252.25
(2) – 415.50
(3) 350.75
(4) 275.25

75. What can be said about total surplus of Country B and Country D over the 4 years?
(1) Surplus of B = Surplus of D
(2) Surplus of D > Surplus of B
(3) Surplus of B > Surplus of D
(4) No relation is there

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. Inspite of the doctor's stern warning (1)/ Latika continued taking (2)/ sugars in her milk. (3)/ No error (4)

77. Myself and Roshni (1)/ will take care of (2)/ the event on Sunday. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. ..... the rain stopped, the concert had to be suspended.
(1) Until (2) Unless
(3) Till (4) While

79. The elephant stampeded and tore ..... the streets.
(1) on (2) out
(3) off (4) down

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Scuttle
(1) Solitary
(2) Superficial
(3) Soothing
(4) Brazier

81. Loquacious
(1) Talkative
(2) Foolishness
(3) Graceful
(4) Entertainer

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Obfuscate
(1) Envelop (2) Puzzle
(3) Haze (4) Clarify

83. Triumph
(1) Establish
(2) Sorrow
(3) Disdain
(4) Elation

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. Chicken-hearted
(1) Coward
(2) Short tempered
(3) Composed
(4) Bold

85. Red letter day
(1) Starting day
(2) Holiday
(3) Significant day
(4) Ending day

Directions (86–87): Improve the **bold** part of the sentence.

86. He jumped off the train while it **had been running**.
(1) has been running
(2) ran
(3) was running
(4) No improvement

87. I **didn't see** him since we met two years ago.
(1) am not seeing
(2) have not seen
(3) had not seen
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

88. One who is new to a profession
(1) Nuance (2) Pun
(3) Tyro (4) Vandal

89. A speech or a presentation made without previous preparation.
(1) Euphemism (2) Obituary
(3) Extempore (4) Soliloquy

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Millionaire (2) Omission
(3) Foreign (4) Proprietry

91. (1) Acquaintence (2) Appeasement
(3) Abnormality (4) Accentuate

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. P. And the victims are likely to be the poorest of the poor as well as the very sources of water-rivers, wetlands and aquifers.
Q. In India, water conflicts are likely to worsen before they begin to be resolved.
R. Till then they pose a significant threat to economic growth, security and health of the ecosystem.
S. Water is radically altering and affecting political boundaries all

over world, between as well as within countries.

(1) SQPR (2) PRQS
(3) QRPS (4) PSQR

93. P. For one, very few entrepreneurs are willing to take on a new outsource, unless it comes with a guarantee of a certain level of sales.

Q. This invariably acts as an incentive for outsources to be lax in developing the business.

R. Despite being the dominant partner in the relationship, the outsourcer doesn't always have all the advantages.

S. The trade refers to it as the minimum guarantee clause, which means that if a outsourcee is unable to reach an anticipated sales level, he will be compensated for the balance amount.

(1) PRQS (2) SPQR
(3) QSPR (4) RPSQ

94. In the following question, a sentence has been given in Active/Passive Voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active Voice.

Somebody told me that there had been a robbery in the jewellery exhibition.

(1) I was informed that there was a robbery in the jewellery exhibition.
(2) I was told by somebody that there has been a robbery in the jewellery exhibition.
(3) I was told by somebody about a robbery in the jewellery exhibition.
(4) I was told about a robbery in the jewellery exhibition.

95. In the following question, a sentence has been given in Direct/Indirect Speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct Speech.

Rohan said, "Where shall I be this time next month".

(1) Rohan contemplated where shall he be that time the following month.
(2) Rohan asked that where should be that time next month.
(3) Rohan wondered where he should be that time the next month.
(4) Rohan wondered where he would be that time the following month.

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The modes of action are ...**96**... in science and religion. Science relies on experiment, whereas religion is based on experience. Any religious ...**97**... whether it is Christ's or Ramakrishna's is personal and ...**98**... . Science, on the other hand is marked by objectivity. Theory has to be corroborated by ...**99**... proof providing material comforts. The frontiers of science do not end in knowledge but are ...**100**... to the formation of appliances for actual use.

96. (1) similar
(2) different
(3) equal
(4) relevant

97. (1) experience
(2) thought
(3) festival
(4) activity

98. (1) significant
(2) irrelevant
(3) subjective
(4) objective

99. (1) intangible (2) transparent
(3) tangible (4) unique

100. (1) implied (2) associated
(3) designated (4) extended

Short Answers

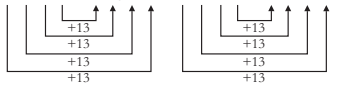
1. (2)	**2.** (1)	**3.** (2)	**4.** (4)	**5.** (3)	**6.** (1)	**7.** (2)	**8.** (2)	**9.** (1)	**10.** (1)
11. (2)	**12.** (1)	**13.** (4)	**14.** (1)	**15.** (3)	**16.** (1)	**17.** (3)	**18.** (1)	**19.** (1)	**20.** (2)
21. (4)	**22.** (2)	**23.** (2)	**24.** (3)	**25.** (3)	**26.** (3)	**27.** (4)	**28.** (3)	**29.** (2)	**30.** (3)
31. (2)	**32.** (4)	**33.** (4)	**34.** (4)	**35.** (4)	**36.** (4)	**37.** (1)	**38.** (3)	**39.** (2)	**40.** (1)
41. (2)	**42.** (4)	**43.** (2)	**44.** (3)	**45.** (3)	**46.** (3)	**47.** (1)	**48.** (3)	**49.** (3)	**50.** (3)
51. (3)	**52.** (4)	**53.** (4)	**54.** (1)	**55.** (3)	**56.** (3)	**57.** (3)	**58.** (1)	**59.** (4)	**60.** (1)
61. (1)	**62.** (2)	**63.** (1)	**64.** (2)	**65.** (1)	**66.** (2)	**67.** (3)	**68.** (2)	**69.** (2)	**70.** (2)
71. (4)	**72.** (2)	**73.** (3)	**74.** (1)	**75.** (2)	**76.** (3)	**77.** (1)	**78.** (1)	**79.** (4)	**80.** (4)
81. (1)	**82.** (4)	**83.** (2)	**84.** (1)	**85.** (3)	**86.** (3)	**87.** (2)	**88.** (3)	**89.** (3)	**90.** (4)
91. (1)	**92.** (1)	**93.** (4)	**94.** (2)	**95.** (4)	**96.** (2)	**97.** (1)	**98.** (3)	**99.** (3)	**100.** (4)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (2) As, a 'Barometer' measures 'Pressure', similarly an 'Odometer' measures 'Distance'.

2. (1) A E D M : Z Q R N :: F L M O : **B Z Y S**



3. (2) As,

$(2 \times 4 \times 3)^2 + 2 = (24)^2 + 2$

$= 576 + 2 = 578$

Similarly,

$(1 \times 6 \times 3)^2 + 2 = (18)^2 + 2$

$= 324 + 2 = \mathbf{326}$

4. (4) Except Root, all the parts of a tree can be seen.

5. (3) B O H C F H D F

+2 –4 +2 +2 –4 +2

P R M P T V R T

+2 –5 +3 +2 –4 +2

6. (1) $\mathbf{2 \times 1 \times 3 \times 2 \neq 161}$

$2 \times 6 \times 7 \times 8 = 672$

$4 \times 3 \times 2 \times 5 = 120$

$6 \times 9 \times 3 \times 1 = 162$

7. (2) Arrangement of the words as per English dictionary :

Dilled (4) → Dillydallied (2) → Dillydallies (5) → Dillydally (3) → Dilly-dallying (1).

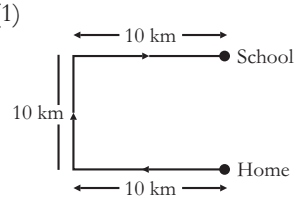
8. (2) l **n** o **o** n m **l** / l **m** n **o o** n m l

9. (1) 21 25 52 68 193 **229**

+4 +27 +16 +125 +36

2^2 3^3 4^2 5^3 6^2

10. (1)



Hence, Kamal is in 10 km north from his home.

11. (2) P > Q

S > T > P

P does not have the least marks.

S > T > P > Q

R

Clearly, Q will have the least marks.

12. (1) There is no 'N' letter in the given word. Therefore, the word PROCEED cannot be formed.

13. (4) As, C A S I O

3 1 19 9 15

Similarly,

C I T I Z E N

3 9 20 9 26 5 14

14. (1) $6 \div 17 \times 51 + 6 - 12 = -4$

From option (1),

$6 \times 17 \div 51 + 6 - 12 = -4$

$6 \times \frac{1}{3} - 6 = -4$

$2 - 6 = -4$

$-4 = -4$

15. (3) As,

$6 \times 9 + 4 = 54 + 4 = 58$

$3 \times 9 + 7 = 27 + 7 = 34$

Similarly,

$A \times 4 + 9 = 91$

$4A = 82$

$A = 20.5$

16. (1) As,

$5 + 6 + 7 + 9 = 9 \times 3$

$\Rightarrow \quad 27 = 27$

$8 + 9 + 7 + 6 = 6 \times 5$

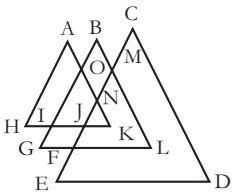
$\Rightarrow \quad 30 = 30$

Similarly,

$? + 3 + 6 + 5 = 6 \times 3$

$\Rightarrow \quad ? = 18 - 14 = \boxed{4}$

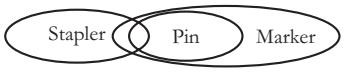
17. (3)



Triangles = AHK, OIK, NJK, BGL, MFL, CED

∴ Number of triangles = 6

18. (1)



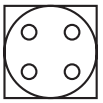
19. (1) From the two views of the same cube, it is clear that '1' lies opposite '4'.

20. (2)

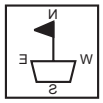
21. (4)

22. (2)

23. (2)



24. (3)



25. (3) G → 00, 41, 32, **23**, 14

U → 75, 56, 87, 68, **99**

I → 95, **76**, 57, 88, 69

D → 85, 66, 97, **78**, 59

E → 40, **31**, 22, 13, 04

For given word GUIDE, group of letters can be represented by the numbers → 23, 99, 76, 78, 31

PART-II
(GENERAL AWARENESS)

26. (3) An oligopolymarket structure characterised by a small number of large firms that dominate the market, selling either identical or differentiated products, with significant barriers to entry into the industry. This is one of four basic market structures. Oligopolies can result from various forms of collusion which reduce competition and lead to higher prices for consumers.

27. (4) Public debt and public revenue comes under Fiscal policy and not Monetary policy.

28. (3) Though the President of India is a constituent part of Parliament, he does not sit or participate in the discussions in either of the two Houses. He does not belong to any of the two houses. He is elected by an electoral college consisting of the elected members of both Houses of Parliament and the elected members of the Legislative Assemblies of the States.

29. (2) Article 352 deals with the proclamation of emergency in India. It deals with the imposition of National emergency in India on the basis of external aggression or armed rebellion in the whole of India or a part of its territory. Such an emergency was declared in India in 1962 (China war), 1971 (Pakistan war) and 1975 (declared by Indira Gandhi).

30. (3) **Bardoli Satyagraha (1928):** It was a no-tax movement that was led by Sardar Vallabhbhai Patel. It was a major episode of civil disobedience and revolt in the Indian Independence Movement. During the Bardoli Satyagraha, Patel received the title of Sardar.

31. (2) **Bal Gangadhar Tilak (Lokmanya Tilak):** He was called the 'Father of Indian Unrest' by Valentine Chirol. He was one of the first and strongest advocates of "Swaraj" (self-rule) and a strong radical in Indian consciousness.

32. (4) Tropical evergreen forests are found in the western slopes of the Western Ghats in Kerala and Karnataka.

33. (4) **Magnetosphere:** It is the region above the Earth's surface in which charged particles are affected by the Earth's magnetic field. The exosphere is now considered as part of the magnetosphere. The outer boundary of the magnetosphere or the final boundary between the Earth and outer space is known its magnetopause.

34. (4) **Thymosin:** It is the hormone of the thymus. It stimulates the development of disease fighting T-cells.

35. (4) **Photosynthesis:** It occurs when green plants use the energy of light to convert carbon dioxide (CO_2) and water (H_2O) into carbohydrates.

36. (4) Blood group AB+ individuals have both A and B antigens on the surface of their RBCs, and their blood plasma does not contain any antibodies against either A or B antigen.

37. (1) A concave mirror can form diminished as well as enlarged images, depending upon the distance of the object from the mirror.

38. (3) Soap bubbles are spherical because of an attractive force called surface tension that pulls molecules of water into the tightest possible groupings.

39. (2) **Computer Aided Design (CAD):** It is the use of computer systems to aid in the creation, modification, analysis or optimization of a design.

40. (1) An exothermic reaction is a chemical or physical reaction that releases heat. It gives net energy to its surroundings.

41. (2) **Sodium Chloride:** It is also known as salt or halite, is an ionic compound with the chemical formula NaCl, representing a 1:1 ratio of sodium and chloride ions. Sodium chloride is the salt most responsible for the salinity of seawater. In its edible form of table salt, it is commonly used as a codiment and food preservative.

42. (4) The comparatively greater amount of CO_2 in the atmosphere, however, means that it accounts for roughly half of the radiative forcing associated with the greenhouse effect. So, it contributes the maximum to the phenomena of global warming.

43. (2) MGNREGA, a Social Audit Committee will be constituted to facilitate the proceedings of Social Audit by the Gram Sabha and undertake activities for the preparatory phase.

44. (3) The safety lamp was invented by Sir Humphry Davy in 1815. It consists of a wick lamp with the flame enclosed inside a mesh screen. It was created for use in coal mines, to reduce the danger of explosions due to the presence of methane and other flammable gases.

45. (3) Stan Wawrinka of Switzerland, in September 2016, won the 2016 US Open men's singles title.

46. (3)

Dancer	Dance
Radha Reddy	Kuchipudi
Padma Subrahmanyam	Bharatnatyam
Sitara Devi	Kathak

47. (1) The Nobel Peace Prize for 2016 was awarded to Colombian President Jaun Manuel Santos for his efforts to end his country's 50 year civil war.

48. (3) **An Era of Darkness: The British Empire in India** has been authored by Congress leader Shashi Tharoor.

49. (3) In January 2017, India signed 14 agreements with the United Arab Emirates, including a deal allowing the Gulf nation to fill the country's strategic storage facility in southern India. India and UAE also decided to elevate the bilateral relationship to a comprehensive Strategic Parnership.

50. (3) Bhutan is also called Druk Yul by its people. It is known as the "Land of the Thunder Dragon".

PART-III
(QUANTITATIVE APTITUDE)

51. (3) Numbers that divisible by 3 = 66
L.C.M. of 3 and 7 = 21
Numbers that divisible by 21 = 9
$\therefore$ Required numbers = 66 – 9 = 57

52. (4) $M_1D_1 = M_2D_2 = M_3D_3$

$10W \times 6 = 6M \times 5 = 8C \times 10$

$6W = 3M = 8C$

$W : M : C = \frac{1}{6} : \frac{1}{3} : \frac{1}{8} = 4 : 8 : 3$

53. (4) The area of the base of the second cylinder = 154

$$\pi r_2^2 = 154$$

$$r_2^2 = \frac{154 \times 7}{22}$$

$$r_2^2 = 7 \times 7$$

$$r_2 = 7 \text{ cm}$$

According to question,

$$\frac{V_1}{V_2} = \frac{\pi r_1^2 h_1}{\pi r_2^2 h_2}$$

$$\frac{7}{3} = \frac{r_1^2}{(7)^2} \times \frac{7}{9}$$

$$r_1^2 = 3 \times 49$$

$$r_1 = 7\sqrt{3} \text{ cm}$$

54. (1) Marked price of clock = ₹ 100

Cost price of clock

$$= 100 \times \frac{75}{100} = ₹\,75$$

Selling price of clock

$$= 75 \times \frac{175}{100}$$

$$= ₹\,131.25$$

Profit percentage on the marked price $= \frac{131.25 - 100}{100} \times 100$

$$= 31.25\%$$

55. (3) A received = $8400 \times \frac{6}{21} = 2400$

B received = $8400 \times \frac{8}{21} = 3200$

C received = $8400 \times \frac{7}{21} = 2800$

B's saving = 400

A's saving = $400 \times \frac{3}{2} = 600$

C's saving = $400 \times \frac{4}{2} = 800$

Required ratio = (2400 – 600): (3200 – 400): (2800 – 800)

$$= 1800 : 2800 : 2000$$

$$= 9 : 14 : 10$$

56. (3) The correct average age

$$= \frac{24 \times 12 - 14 + 8}{24}$$

$$= \frac{288 - 6}{24}$$

$$= \frac{282}{24} = 11.75 \text{ years}$$

57. (3) Cost price and selling price of the article = 100 and x

According to question,

$$100 \times \frac{70}{100} = x \times \frac{40}{100}$$

$$\Rightarrow \quad x = 175$$

Profit percentage

$$= \frac{175 - 100}{100} \times 100 = 75\%$$

58. (1) $\frac{b \times a}{100} + \frac{a \times b}{100} = \frac{2ab}{100}$

$2a\%$ of b

59. (4) Usual speed = v

According to question,

$$\frac{d}{v} - \frac{6d}{7v} = \frac{15}{60}$$

or, $$\frac{d}{7v} = \frac{1}{4}$$

$$\therefore \quad \frac{d}{v} = \frac{7}{4} \times 60 = 105$$

Usual time = 105 minute

60. (1) Rate of interest = $r\%$

According to question,

$$\frac{10000 \times r \times 3}{100} + \frac{6000 \times r \times 4}{100} = 5400$$

or, $300r + 240r = 5400$

or, $540r = 5400$

$\Rightarrow \quad r = 10\%$

61. (1) $x^3 + 2x^2 - 5x + k = 0$

On putting $x = -1$,

$(-1)^3 + 2(-1)^2 - 5(-1) + k = 0$

$-1 + 2 + 5 + k = 0$

$6 + k = 0$

$\therefore \quad k = -6$

62. (2) $3x + \frac{1}{5x} = 7$

$15x^2 + 1 = 35x$

$15x^2 + 15x + 1 = 50x$

$$\frac{5x}{15x^2 + 15x + 1} = \frac{5x}{50} = \frac{1}{10}$$

63. (1) $x + \frac{1}{4x} = \frac{5}{2}$

or, $$\frac{4x^2 + 1}{4x} = \frac{5}{2}$$

or, $4x^2 + 1 = 10x$

or, $64x^6 + 1 + 12x^2(4x^2 + 1) = 1000x^3$

or, $64x^6 + 1 + 12x^2 \times 10x = 1000x^3$

or, $64x^6 + 1 = 1000x^3 - 120x^3 = 880x^3$

$$\frac{64x^6 + 1}{8x^3} = \frac{880x^3}{8x^3} = 110$$

64. (2) $x^2 + x = 19$

or, $x^2 + 2 \times x \times 5 + 5^2 - 9x = 19 + 5^2$

or, $(x + 5)^2 - 9x = 44$

or, $(x + 5)^2 - 9(x + 5) = 44 - 45$

or, $(x + 5)^2 - 9(x + 5) = -1$

or, $$(x + 5) - 9 = \frac{-1}{x + 5}$$

or, $$(x + 5) + \frac{1}{x + 5} = 9$$

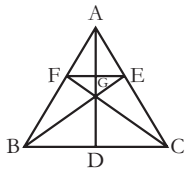
On squaring both sides,

$$(x + 5)^2 + \frac{1}{(x + 5)^2} + 2 = 81$$

or, $$(x + 5)^2 + \frac{1}{(x + 5)^2} = 81 - 2$$

$$= 79$$

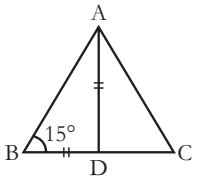
65. (1) $\frac{\Delta FGE}{\Delta ABC} = \frac{1}{12}$



$$\Delta FGE = \frac{\Delta ABC}{12} = \frac{156}{12}$$

$\Delta FGE = 13 \text{ cm}^2$

66. (2) In ΔABD,



$\because \quad AD = BD$

$\therefore \quad \angle ABD = \angle BAD = 15°$

$\angle ADC = \angle ABD + \angle BAD$

$= 15° + 15° = 30°$

67. (3) The diagonal of square = $9\sqrt{2}$ cm

The side of square = $\frac{9\sqrt{2}}{\sqrt{2}} = 9$ cm

Perimeter of square = Perimeter of triangle

$$4 \times 9 = 3a$$

$$a = 12 \text{ cm}$$

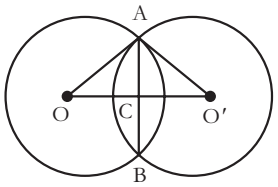
Radius of Incircle = $\frac{a}{2\sqrt{3}} = \frac{12}{2\sqrt{3}}$

Area of Incircle = $\pi \left[\frac{6}{\sqrt{3}}\right]^2 = \frac{36\pi}{3}$

$= 12\pi \text{ cm}^2$

68. (2) $\because \quad AB = 12$ cm

$\therefore \quad AC = CB = 6$ cm



$$OA = \frac{15}{2} \text{ cm},$$

$$AO' = \frac{13}{2} \text{ cm}$$

In ΔAOC,

$$(OA)^2 = (AC)^2 + (OC)^2$$

$$\left(\frac{15}{2}\right)^2 = (6)^2 + (OC)^2$$

$$(OC)^2 = \frac{225}{4} - 36 = \frac{81}{4}$$

$$OC = \frac{9}{2} \text{ cm}$$

In $\Delta ACO'$,

$$(O'A)^2 = (AC)^2 + (CO')^2$$

$$\left(\frac{13}{2}\right)^2 = (6)^2 + (O'C)^2$$

$$(O'C)^2 = \frac{169}{4} - 36 = \frac{25}{4}$$

$$O'C = \frac{5}{2} \text{ cm}$$

$$\therefore \quad OO' = OC + CO'$$

$$= \frac{9}{2} + \frac{5}{2} = \frac{14}{2} = 7 \text{ cm}$$

69. (2) $\sec^4\theta - \sec^2\theta \tan^2\theta$
$= \sec^2\theta [\sec^2\theta - \tan^2\theta] = \sec^2\theta$

70. (2) (sin A – cosec A) (sec A – cos A) (tan A + cot A)

$$= \left(\sin A - \frac{1}{\sin A}\right)\left(\frac{1}{\cos A} - \cos A\right)$$

$$\left(\frac{\sin A}{\cos A} + \frac{\cos A}{\sin A}\right)$$

$$= \left(\frac{\sin^2 A - 1}{\sin A}\right)\left(\frac{1 - \cos^2 A}{\cos A}\right)$$

$$\left(\frac{\sin^2 A + \cos^2 A}{\sin A \cos A}\right)$$

$$= \frac{(-\cos^2 A) \times \sin^2 A}{\sin^2 A \cos^2 A} = -1$$

71. (4) $\frac{1}{\cos\theta} - \frac{1}{\cot\theta} = \frac{1}{P}$

or, $\sec\theta - \tan\theta = \frac{1}{P}$ ... (i)

$\therefore \quad \sec^2\theta - \tan^2\theta = 1$

or, $(\sec\theta + \tan\theta)(\sec\theta - \tan\theta) = 1$

or, $\sec\theta + \tan\theta = p$ ... (ii)

On adding equations (i) and (ii),

$$2\cos\theta = p + \frac{1}{p}$$

or, $$2\sec\theta = \frac{p^2 + 1}{p}$$

or, $$\sec\theta = \frac{p^2 + 1}{2p}$$

$$\therefore \quad \cos\theta = \frac{2p}{p^2 + 1}$$

72. (2) The surplus of Country A of years 2013 and 2014 = (1671 – 1641) + (1103 – 1002) = 30 + 101 = 131

73. (3) Country C

Surplus in 2011 = 2035 – 2247
= – 212

Surplus in 2012 = 1821 – 2018
= – 197

Surplus in 2013 = 1937 – 2563
= – 626

Surplus in 2014 = 3014 – 2988
= 26

The stock of Country C at end of the 4 year period
= 7835 – 212 – 197 – 626 + 26
= 6826

74. (1) Average production of Country C

$$= \frac{2035 + 1821 + 1937 + 3014}{4}$$

$$= \frac{8807}{4} = 2201.75$$

Average sales of Country C

$$= \frac{2247 + 2018 + 2526 + 2988}{4}$$

$$= \frac{9816}{4} = 2454$$

Required difference
= 2201.75 – 2454
= – 252.25

75. (2) Total surplus of Country B
= 1881 – 1798 + 2067 – 2389 + 1328 – 2063 + 1578 + 1239
= 83 – 322 – 735 + 339 = – 635

Total surplus of Country D
= 3126 – 2417 + 2987 – 2911 + 2143 – 3188 + 4126 – 3563
= 709 – 76 – 1045 + 563 = 303

$\therefore$ Surplus of D > Surplus of B

PART-IV
(ENGLISH LANGUAGE)

76. (3) In the given sentence, part (3) has an error. To correct the sentence use 'sugar' in place of 'sugars'.

77. (1) In the given sentence, part (1) has an error. To correct the sentence use 'Roshni and I' in place of 'Myself and Roshni'.

78. (1) **Appropriate word → Until:** is used as a subordinating conjunction to connect an action or an event to a point in time.

79. (4) **Appropriate word → Tear down:** an act of completely dismantling something; destroy something.

80. (4) **Scuttle/Brazier (Noun):** a metal container with a handle, used to store coal for a domestic fire; a shallow open basket for carrying something.

Sentence → Half a scuttle of coal twice per day is required to keep the fire burning.

81. (1) **Loquacious/Talkative (Adjective):** garrulous; tending to talk a great deal.

Sentence → He was loquacious, providing a great deal of his introspection in public.

82. (4) Opposite of Obfuscate is

Clarify (Verb): make something less confused and more comprehensible; to make something clear.

Sentence → The position of all directors will be clarified next month when we finalise our proposals.

83. (2) Opposite of Triumph is

Sorrow (Noun): a feeling of deep distress caused by loss or other misfortune; unhappiness.

Sentence → The sorrows of her earlier years gave way to joy in later life.

84. (1) **Chicken-hearted:** easily frightened; fearful; timid; cowardly.

Sentence → Obviously Rani had noticed our unexpected visitors at the river and made for home as fast as chicken-hearted legs could carry him.

85. (3) **Red letter day:** a special, happy and important day that you will always remember; significant day.

Sentence → The day I first set foot in America was a red letter day for me.

86. (3) For improvement of sentence use 'was running' in place of 'had been running'.

87. (2) For improvement of sentence use 'have not seen' in place of 'didn't see'.

88. (3) Best substitute of the sentence is:

Tyro (Noun): a beginner or novice.

Sentence → I look forward to seeing this young tyro's next game.

89. (3) Best substitute of the sentence is:

Extempore (Adjective): done or said without any preparation or thought.

Sentence → At the audition, the actors were asked to perform extempore.

90. (4) Correctly spelt word →

Propriety (Noun): Correct moral behaviour or actions.

Sentence → She was careful always to behave with propriety.

91. (1) Correctly spelt word →

Acquaintance (Noun): Familiarity; a person that you have met but do not know well.

92. (1) Logical order of the sentences to form a coherent paragraph → SQPR

93. (4) Logical order of the sentences to form a coherent paragraph → RPSQ

94. (2) Passive/Active Voice

I was told by somebody that there has been a robbery in the jewellery exhibition.

Somebody told me ⇒ I was told by somebody.

95. (4) Indirect/Direct Speech

Rohan wondered where he would be that time the following month.

Rohan said ⇒ Rohan wondered Where shall I be this time next month ⇒ Where he would be that time the following month.

96. (2) Best option for blank → different

97. (1) Best option for blank → experience.

98. (3) Best option for blank → **Subjective:** personalised.

99. (3) Best option for blank → **Tangible (Adjective):** real and not imaginary.

100. (4) Best option for blank → extended

❑❑❑

14

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 11 August, 2017 (III)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Ampere : Electric current : : Fathom : ?
(1) Depth of Water
(2) Frequency
(3) Sound level
(4) Work or energy

2. AKP : 1121256 : : LNO : ?
(1) 196125144 (2) 144196225
(3) 144225196 (4) 41521196

3. 534 : 2 : : ? : ?
(1) 102 : 9 (2) 553 : 6
(3) 884 : 2 (4) 999 : 2

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Baseball (2) Football
(3) Hockey (4) Snooker

5. (1) BOH (2) ERK
(3) HUO (4) KXQ

6. (1) 145 (2) 463
(3) 581 (4) 651

7. Arrange the given words in the sequence in which they occur in the dictionary.
1. Clocklipe 2. Cloddier
3. Clodpates 4. Clodpolls
5. Clockwise
(1) 15234 (2) 23154
(3) 24315 (4) 51234

8. In the following questions, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
efg _ _ eff _ ghhe _ eff _ gggh _ h
(1) eghhfe (2) ghhhh
(3) hegefh (4) hgefhe

9. In the following question, select the missing number from the given series.
5, 13, 40, 104, ?
(1) 229 (2) 239
(3) 259 (4) 269

10. The ratio of the present ages of Aman and Ankit is 2 : 1 and the sum of their present ages is 72 years. What will be the Aman's age (in years) after 6 years?
(1) 30 years (2) 48 years
(3) 52 years (4) 54 years

11. There are five girls – R, S, T, P and Q sitting in a row facing north. T is sitting exactly in the middle of the row. Q is sitting to the immediate right and immediate left of P and T respectively. S is not sitting at the extreme end. Who is sitting third to the left of R?
(1) P (2) Q
(3) S (4) T

12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
ERADICATE
(1) AREA (2) CARE
(3) DICE (4) TASTE

13. In a certain code language, 'hit ka tom' is written as 'tie the shoes', 'ka lo fod' is written as 'shoes of leather' and 'lo tin lot' is written as 'leather and raxin'. How is 'of' written in this code language?
(1) fod (2) ka
(3) lo or fod (4) tin

14. If "–" means "added to", "+" means "divided by", "÷" means "multiplied by", "×" means "subtracted from", then 13 + 12 × 9 ÷ – 6 = ?
(1) $-\frac{117}{11}$ (2) $\frac{117}{11}$
(3) $-\frac{237}{12}$ (4) $-\frac{239}{12}$

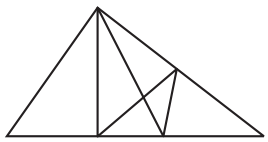
15. If 6 @ 4 @ 7 = 101 and 2 @ 5 @ 11 = 150, then what is the value of A in A @ 8 @ 9 = 289?
(1) 5 (2) 8
(3) 12 (4) 17

16. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

20 | 72	90 | 110	56 | ?
2 | 3 | 6	3 | 7 | 4	1 | 7 | 6

(1) 112 (2) 144
(3) 156 (4) 186

17. How many triangles are there in the given figure?



(1) 13 (2) 14
(3) 15 (4) 16

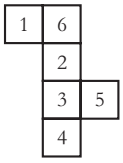
18. In the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements?

Statements:
Some banks are private.
All private are industry.

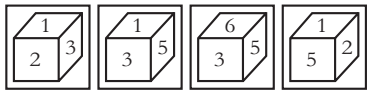
Conclusions:
I. Some banks are industry.
II. All banks are industry.
(1) Only conclusion I follows
(2) Only conclusion II follows
(3) Neither conclusions I nor II follows
(4) Both conclusions follow

19. From the given options, which answer figure can be formed by folding the figure given in the question?

Question Figure

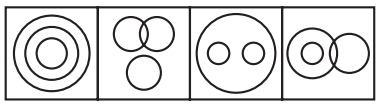


Answer Figures



(1) (2) (3) (4)

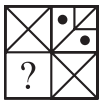
20. Identify the diagram that best represents the relationship among the given classes.
Animal, Leopard, Lion



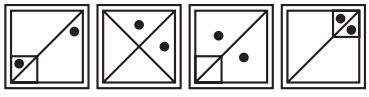
(1) (2) (3) (4)

21. Which answer figure will complete the pattern in the question figure?

Question Figure



Answer Figures

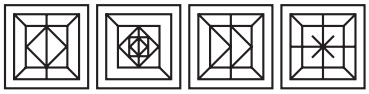


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

Answer Figures

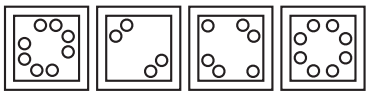


(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figure. From the given answer figures, indicate how it will appear when opened?

Question Figure

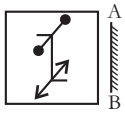
Answer Figures



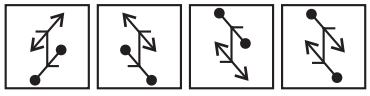
(1) (2) (3) (4)

24. If a mirror is placed on the line AB, then which of the answer figure is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'F' can be represented by 03, 34, etc. and 'A' can be represented by 31, 43, etc. Similarly, you have to identify the set for the word 'RATES'.

Matrix-I

	0	1	2	3	4
0	A	G	R	F	E
1	F	E	A	G	R
2	G	R	F	E	A
3	E	A	G	R	F
4	R	F	E	A	G

Matrix-II

	5	6	7	8	9
5	T	P	U	S	O
6	S	O	T	P	U
7	P	U	S	O	T
8	O	T	P	U	S
9	U	S	O	T	P

(1) 33, 00, 98, 30, 88
(2) 14, 43, 55, 11, 68
(3) 21, 24, 86, 42, 56
(4) 02, 12, 67, 04, 96

PART-II
(GENERAL AWARENESS)

26. Courier service comes under which sector?
(1) Primary
(2) Secondary
(3) Tertiary
(4) Both Secondary and Tertiary

27. Which among the following is not a direct tax?
(1) Income tax
(2) Wealth tax
(3) Corporate tax
(4) None of these

28. Which of the following is justiciable in nature?

(1) Fundamental Duties
(2) Directive principles of state policy
(3) Fundamental Rights
(4) None of these

29. Which of the following Amendments is also known as the 'Mini Constitution' of India?
(1) 7th Amendment
(2) 42nd Amendment
(3) 44th Amendment
(4) 74th Amendment

30. Match the following.

Column-1	Column-II
1. Brihadeshwara Temple	a. Odisha
2. Dilwara Temple	b. Tamil Nadu
3. Lingraja Temple	c. Karnataka
4. Hampi Group Monuments	d. Rajasthan

(1) 1 – c, 2 – d, 3 – a, 4 – b
(2) 1 – a, 2 – c, 3 – d, 4 – b
(3) 1 – b, 2 – d, 3 – a, 4 – c
(4) 1 – b, 2 – a, 3 – d, 4 – c

31. In which battle was Siraj-ud-Daulah defeated by Lord Clive?
(1) Battle of Plassey
(2) Battle of Buxer
(3) Battle of Panipat
(4) Battle of Haldighati

32. Alps mountain range is located in which continent?
(1) Europe
(2) North America
(3) South America
(4) Africa

33. What is the full form of ITCZ?
(1) Inter Tropical Converter Zone
(2) Inter Tropical Convergence Zone
(3) Inter Tropical Centre Zone
(4) None of these

34. Which among the following does not have a cell wall?
(1) Euglena (2) Paramecium
(3) Gonyaulax (4) Mycoplasma

35. Which among the following is also called as 'power house of the cell'?
(1) Plastids (2) Mitochondria
(3) Golgibodies (4) Cell wall

36. What is the role of Pneumatophores?
(1) Protect plant from animals
(2) Get oxygen for respiration
(3) Supports plant in standing upright
(4) Helps plant for pollination

37. Which among the following determines the pitch of a sound?
(1) Amplitude (2) Frequency
(3) Loudness (4) Wavelength

38. Which phenomena shows the particle nature of light?
(1) Diffraction
(2) Interference
(3) Photoelectric effect
(4) Polarisation

39. Who is called as 'Father of Modern Computer'?
(1) Alexander Flemming
(2) Bill Gates
(3) Michael Faraday
(4) Charles Babbage

40. What is the common name of $CaOCl_2$?
(1) Baking Powder
(2) Baking Soda
(3) Bleaching Powder
(4) Washing Soda

41. What is the common characteristic of the elements of the same group in the periodic table?
(1) Electrons in outermost shell
(2) Total number of electrons
(3) Total number of protons
(4) Atomic weight

42. Which disease is caused by Nickel?
(1) Itai Itai
(2) Dermatitis
(3) Learning disability
(4) Asthma

43. When was 'Pregnancy Aid Scheme' launched to help pregnant women financially with ₹ 6,000/-?
(1) 1 December, 2016
(2) 19 December, 2016
(3) 31 December, 2016
(4) 1 January, 2017

44. Who pioneered diagnostic ultrasound?
(1) Alexander Flemming
(2) Ian Donald
(3) A. Laveran
(4) Robert Koch

45. Which of the following pair is correct?
I. Summer Olympics 2020 – Tokyo
II. Summer Olympics 2016 – Rio de Janeiro
III. Summer Olympics 2012 – London
(1) I and II (2) I and III
(3) II and III (4) All are correct

46. Prime Minister of which country attended the recently organised river festival 'Namami Brahmaputra' in India?
(1) Bhutan (2) China
(3) Nepal (4) Bangladesh

47. Who among the following has been awarded the 'Rajiv Gandhi Khel Ratna Award' for the year 2016?
(1) Jitu Rai
(2) Sania Mirza
(3) Rohit Sharma
(4) Babita Kumari

48. Who is the author of the book 'Akhada: The Authorized Biography of Mahavir Singh Phogat'?
(1) Rabi Thapa
(2) Saurabh Duggal
(3) Salman Rushdie
(4) Tana French

49. With which Australian University Indian Railways has signed an agreement for Dedicated Freight Corridor?
(1) Monash University
(2) Victoria University
(3) University of Canberra
(4) University of Sydney

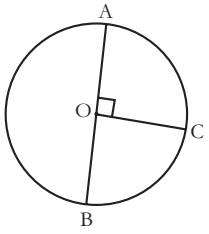
50. With which neighbouring country of India, Kaladan multi-model transport project has been undertaken?
(1) China (2) Nepal
(3) Bhutan (4) Myanmar

PART-III
(QUANTITATIVE APTITUDE)

51. If the square of sum of three positive consecutive natural numbers exceeds the sum of their squares by 292, then what is the largest of the three numbers?
(1) 5 (2) 6
(3) 7 (4) 8

52. A can do a piece of work in 6 days working 8 hours a day while B can do the same work in 4 days working 10 hours a day. If the work has to be completed in 5 days, so how many hours do they need to work together in a day?
(1) 4 hours (2) $5\frac{4}{11}$ hours
(3) $6\frac{4}{11}$ hours (4) $4\frac{4}{11}$ hours

53.



In the given figure, the length of arc BC of the given circle is 44 cm. If O is the centre of circle, then what is the radius (in cm) of the circle?
(1) 7 cm (2) 14 cm
(3) 28 cm (4) 35 cm

54. A shopkeeper allows 25% discount on the marked price of an article and he suffered a loss of 15%. What will be the profit percent if the article is sold at marked price?
(1) 11.76% (2) 12.12%
(3) 13.33% (4) 14.28%

55. Three boxes of capacity 24 kg, 36 kg and 84 kg are completely filled with three varieties of wheat A, B and C respectively. All the three boxes were emptied and the three types of wheat were thoroughly mixed and the mixture was put back in the three boxes. How many kg of type A wheat would be there in the third box (in kg)?
(1) 10 kg (2) 12 kg
(3) 14 kg (4) 16 kg

56. A group of boys has an average weight of 36 kg. One boy weighing 42 kg leaves the group and another boy weighing 30 kg joins the group. If the average now becomes 35.7 kg, then how many boys are there in the group?
(1) 30 (2) 32
(3) 40 (4) 56

57. A man gains 15% by selling a calculator for a certain price. If he sells it at the triple the price, then what will be the profit percentage?
(1) 125% (2) 175%
(3) 225% (4) 245%

58. In an election between two candidates, the winning candidate has got 70% of the votes polled and has won by 15400 votes. What is the number of votes polled for loosing candidate?
(1) 38500 (2) 11550
(3) 26950 (4) 13550

59. A boat goes 4 km upstream and 4 km downstream in 1 hour. The same boat goes 5 km downstream and 3 km upstream in 55 minutes. What is the speed (in km/h) of boat in still water?
(1) 6.5 km/h (2) 7.75 km/h
(3) 9 km/h (4) 10.5 km/h

60. Simple interest received by a person in 10 years on a principal of ₹ 9,500/- is 130% of the principal. What is the rate of interest (in percentage) per annum?
(1) 12% (2) 13%
(3) 15% (4) 19%

61. For what value of k, the expression $x^6 - 18x^3 + k$ will be a perfect square?
(1) – 9 (2) – 81
(3) + 9 (4) + 81

62. If $\frac{\sqrt{5+x}+\sqrt{5-x}}{\sqrt{5+x}-\sqrt{5-x}} = 3$, then what is the value of x?
(1) $\frac{5}{2}$ (2) $\frac{25}{3}$
(3) 4 (4) 3

63. If $(x + y + z) = 12$, $xy + yz + zx = 44$ and $xyz = 48$, then what is the value of $x^3 + y^3 + z^3$?
(1) 104 (2) 144
(3) 196 (4) 288

64. If $x = \frac{4\sqrt{ab}}{\sqrt{a}+\sqrt{b}}$, then what is the value of $\frac{x+2\sqrt{a}}{x-2\sqrt{a}} + \frac{x+2\sqrt{b}}{x-2\sqrt{b}}$ (when $a \neq b$)?
(1) 0 (2) 2
(3) 4 (4) $\frac{(\sqrt{a}+\sqrt{b})}{(\sqrt{a}-\sqrt{b})}$

65. In a ΔPQR, $\angle Q = 90°$. If $PQ = 12$ cm and $QR = 5$ cm, then what is the radius (in cm) of the circumcircle of the triangle?
(1) 5 cm (2) 6 cm
(3) 6.5 cm (4) $6\sqrt{2}$ cm

66. If a chord of a circle subtends an angle of 30° at the circumference of the circle, then what is the ratio of the radius of the circle and the length of the chord respectively?
(1) 1 : 1 (2) 2 : 1
(3) 3 : 1 (4) $\sqrt{2}$: 1

67. The tangents drawn at points A and B of a circle with centre O, meet at P. If $\angle AOB = 120°$ and $AP = 6$ cm, then what is the area (in cm^2) of ΔAPB?
(1) $6\sqrt{3}$ cm^2 (2) $8\sqrt{3}$ cm^2
(3) 9 cm^2 (4) $9\sqrt{3}$ cm^2

68. P is a point outside the circle at distance of 6.5 cm from centre O of the circle. PR be a secant such that it intersects the circle at Q and R. If $PQ = 4.5$ cm and $QR = 3.5$ cm, then what is the radius (in cm) of the circle?
(1) 1.5 cm (2) 2 cm
(3) 2.5 cm (4) 3 cm

69. What is the value of $\left[\frac{1}{(1-\tan\theta)} - \frac{1}{(1+\tan\theta)}\right]$?
(1) $\tan\theta$ (2) $\cot 2\theta$
(3) $\tan 2\theta$ (4) $\cot\theta$

70. If $\tan\theta + \cot\theta = x$, then what is the value of $\tan^4\theta + \cot^4\theta$?

(1) $(x^3 - 3)\ 2 + 2$
(2) $(x^4 - 2x) + 4$
(3) $x(x - 4) + 2$
(4) $x^2\ (x^2 - 4) + 2$

71. If $\tan^2 \theta + \cot^2 \theta = 2$, then what is the value of $2^{\sec \theta + \text{cosec}\ \theta}$?
(1) 0 (2) 1
(3) 2 (4) 4

Directions (72–75): The table given below represents the amount of education loan (in crore) disbursed by 5 banks of a country over 5 years.

Year	Amount of education loan disbursed (in crore)				
	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5
2010	265	65	138	109	80
2011	295	118	165	123	103
2012	317	85	195	125	140
2013	323	103	178	142	143
2014	352	122	211	157	158

72. What is the percentage increase in education loan disbursed by Bank 2 from 2010 to 2014?
(1) 85.42% (2) 87.69%
(3) 89.21% (4) 83.18%

73. Which banks show a continuous trend of increase/decrease in loan amount disbursed over 5 years?
(1) Bank 1 and Bank 4
(2) Bank 1, Bank 4 and Bank 3
(3) Bank 1, Bank 4 and Bank 5
(4) Bank 4 and Bank 5

74. What can be said about the two following ratios?
I. Loan amount disbursed by Bank 1 in 2011/Loan amount disbursed by Bank 2 in 2014
II. Loan amount disbursed by Bank 3 in 2014/ Loan amount disbursed by Bank 4 in 2011
(1) I > II (2) I < II
(3) I = II (4) No relation

75. Which of the following is the correct order of percentage increase in loan amount disbursed by the given banks from 2010 to 2014?
(1) Bank 3 > Bank 5 > Bank 2 > Bank 1 > Bank 4
(2) Bank 2 > Bank 3 > Bank 5 > Bank 1 > Bank 4
(3) Bank 5 > Bank 2 > Bank 3 > Bank 4 > Bank 1
(4) Bank 2 > Bank 5 > Bank 4 > Bank 3 > Bank 1

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. Ritika decided to get up early (1)/ to wear a nice dress (2)/ and visit her aunt. (3)/ No error (4)

77. The student asked me if (1)/ I knew that Kalidas was the greater (2)/ than any other poet. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. It is mainly due to Peter's lethargy that the plan fell ..... .
(1) off (2) through
(3) in (4) out

79. Mother shall return ..... an hour.
(1) in (2) after
(3) during (4) within

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Surreptitious
(1) Hesitation (2) Secret
(3) Impious (4) Artless

81. Inanition
(1) Lethargy (2) Offensive
(3) Vaccilating (4) Grasping

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Imbroglio
(1) Misery (2) Censure
(3) Composure (4) Dilemma

83. Bequest
(1) Accord
(2) Damage
(3) Complex
(4) Withdraw

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. Adam's ale
(1) Gift (2) Food
(3) Water (4) Belongings

85. At one's wits end
(1) A man of ability
(2) At the last moment
(3) To get puzzled
(4) Undecided controversy

Directions (86–87): Improve the **bold** part of the sentence.

86. I had not completed my project so I thought I was **done with** when the manager asked me to hand it in.
(1) done for
(2) done in
(3) done on
(4) No improvement

87. Rohan was upset and so **picked up** his food while his cousins ate heartily.
(1) Picked out
(2) Picked on
(3) Picked at
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

88. To give up a throne voluntarily
(1) Archer (2) Bigot
(3) Abdicate (4) Delegate

89. Words written on the tomb of a person
(1) Epigram
(2) Epitome
(3) Epicure
(4) Epitaph

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Accurate (2) Business
(3) Sedentery (4) Jewellery

91. (1) Chaufer (2) Committee
(3) Vaterinary (4) Repentance

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent pargraph.

92. P. They never desert us even when all fair weather friends have deserted us.
Q. Books are never failing friends.
R. They dispel the dark clouds of gloom from our minds and increase our happiness if we are already happy.
S. Through the ages, the scriptures and other great books have provided, immesurable solace to the wounded and strife torn humanity.
(1) QRSP (2) PRSQ
(3) RSPQ (4) QPRS

93. P. When the robber was near her bed, she stood up suddenly, brandishing the knife.
Q. One night the robber did enter her room but Lakshmi did not make any sound.
R. She just kept a tight hold of the knife and pretended to be sound asleep.
S. The robber was taken aback and with a loud cry, he ran out.
(1) SQRP (2) PRQS
(3) QRPS (4) PSQR

94. In the following question, a sentence has been given in Active/Passive voice. Out of four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
I will write an essay.
(1) An essay will have been written by me.
(2) An essay will be written by me.
(3) An essay has been written by me.
(4) An essay had been written by me.

95. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
Neha said, "Need I write a letter?"
(1) Neha asked if she have to write a letter.
(2) Neha asked if she had been writing a letter.
(3) Neha asked of writing a letter.
(4) Neha asked if she had to write a letter.

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The quest for a ...**(96)**... life engrosses every human being on this earth. Everyman tends to define a happy life in a ...**(97)**... individualistic fashion. ...**(98)**... have attempted to define a happy life in various terms. Hedonists have a ...**(99)**... notion that happiness lies in the ...**(100)**... of physical appetites.

96. (1) simple (2) sad
(3) happy (4) real

97. (1) distinctly (2) identically
(3) similar (4) serious

98. (1) Professors (2) Thinkers
(3) Researchers (4) Scientists

99. (1) complex
(2) distinct
(3) varied
(4) simple

100. (1) gratification
(2) simplification
(3) purification
(4) identification

Short Answers

1. (1)	**2.** (2)	**3.** (4)	**4.** (4)	**5.** (3)	**6.** (2)	**7.** (1)	**8.** (3)	**9.** (1)	**10.** (4)
11. (2)	**12.** (4)	**13.** (1)	**14.** (4)	**15.** (3)	**16.** (3)	**17.** (3)	**18.** (1)	**19.** (1)	**20.** (3)
21. (3)	**22.** (3)	**23.** (1)	**24.** (3)	**25.** (4)	**26.** (3)	**27.** (4)	**28.** (3)	**29.** (2)	**30.** (3)
31. (1)	**32.** (1)	**33.** (2)	**34.** (4)	**35.** (2)	**36.** (2)	**37.** (2)	**38.** (3)	**39.** (4)	**40.** (3)
41. (1)	**42.** (2)	**43.** (3)	**44.** (2)	**45.** (4)	**46.** (1)	**47.** (1)	**48.** (2)	**49.** (1)	**50.** (4)
51. (4)	**52.** (4)	**53.** (3)	**54.** (3)	**55.** (3)	**56.** (3)	**57.** (4)	**58.** (2)	**59.** (3)	**60.** (2)
61. (4)	**62.** (4)	**63.** (4)	**64.** (2)	**65.** (3)	**66.** (1)	**67.** (4)	**68.** (3)	**69.** (3)	**70.** (4)
71. (4)	**72.** (2)	**73.** (3)	**74.** (1)	**75.** (3)	**76.** (3)	**77.** (2)	**78.** (2)	**79.** (4)	**80.** (2)
81. (1)	**82.** (3)	**83.** (4)	**84.** (3)	**85.** (3)	**86.** (1)	**87.** (3)	**88.** (3)	**89.** (4)	**90.** (3)
91. (1)	**92.** (4)	**93.** (3)	**94.** (2)	**95.** (4)	**96.** (3)	**97.** (1)	**98.** (2)	**99.** (4)	**100.** (1)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (1) The unit of measurement of strength of electric current is Ampere. Similarly, depth of water is measured in fathom.

2. (2) As,

$$A\ K\ P = (1)^2\ (11)^2\ (16)^2$$
$$= 1121256$$

Similarly,

$$L\ N\ O = (12)^2\ (14)^2\ (15)^2$$
$$= \mathbf{144196225}$$

3. (4) As,

$5\ 3\ 4 \rightarrow (5 + 3) \div 4 = 8 \div 4 = 2$

Similarly,

$9\ 9\ 9 \rightarrow (9 + 9) \div 9 = 18 \div 9 = \mathbf{2}$

4. (4) Snooker is an Indoor game while all other are outdoor games.

5. (2)

B O H E R K
+14 +7 +14 +7

H U O K X Q
+14 –6 +14 +7

6. (2) Number 463 is a prime number.

7. (1) Arrangement of the words as per English dictionary:

Clocklipe (1) → Clockwise (5) → Cloddier (2) → Clodpates (3) → Clodpolls (4).

8. (3) e f g **h e** f f **g** h h e **e** e f f **f** g g g h **h** h

9. (1)

5 13 40 104 **229**
+8 +27 +64 +125
2^3 3^3 4^3 5^3

10. (4) Aman's present age = $2x$ years

Ankit's present age = x years

According to question,

$$2x + x = 72$$
$$3x = 72$$
$$x = 24$$

Aman's age after 6 years

$$= 2 \times 24 + 6$$
$$= 54 \text{ years}$$

11. (2)

Q T S R
Third to the left

12. (4) The word 'TASTE' cannot be formed using the letters of the given word because the word 'ERADICATE' does not have letter 'S'.

13. (1) hit (ka) tom → tie the (shoes)

(ka) [lo] fod → (shoes) of [leather]

[lo] tin lot → [leather] and raxin

∴ of → fod

14. (4) $? = 13 + 12 \times 9 \div 3 - 6$

$? = 13 \div 12 - 9 \times 3 + 6$

$$? = \frac{13}{12} - 27 + 6 = \frac{13}{12} - 21$$

$$? = \frac{13 - 252}{12} = -\frac{239}{12}$$

15. (3) $(6)^2 + (4)^2 + (7)^2$

$= 36 + 16 + 49 = 101$

$(2)^2 + (5)^2 + (11)^2$

$= 4 + 25 + 121 = 150$

Similarly,

$$(A)^2 + (8)^2 + (9)^2 = 289$$
$$(A)^2 = 289 - 64 - 81$$
$$= 144$$
$$A = 12$$

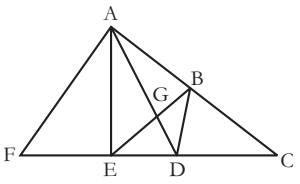
16. (3) $(1 + 7) \times (1 + 7 - 1)$

$= 8 \times 7 = 56$

$(7 + 6) \times (7 + 6 - 1)$

$= 13 \times 12 = 156 = ?$

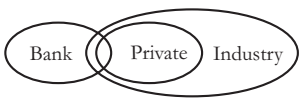
17. (3)



Triangles = AFE, AEG, AED, AGB, ADB, ADC, AFD, AFC, GED, GBD, BDC, BEC, AEB, AEC, DBE

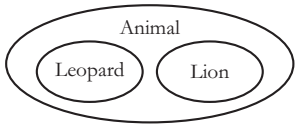
Number of triangles = 15

18. (1)



19. (1) Answer figure (1) is formed by folding the figure given in the question.

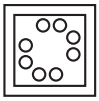
20. (3)



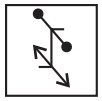
21. (3)

22. (3)

23. (1)



24. (3)



25. (4) R → 40, 21, **02**, 33, 14

A → 00, 31, **12**, 43, 24

T → 55, 86, **67**, 98, 79

E → 30, 11, 42, 23, **04**

S → 65, **96**, 77, 68, 89

For given word RATES, group of letters can be represented by the numbers → 02, 16, 67, 04, 96.

PART-II
(GENERAL AWARENESS)

26. (3) Courier service comes under tertiary sector or service sector, the third of the three economic sectors of the three sector theory.

27. (4) Direct Taxes are taxes that are directly paid to the government by the taxpayer. It is a tax applied on individuals and organisations directly by the government. For example: income tax, corporation tax, wealth tax, etc.

28. (3) Fundamental rights are justiciable in nature which means that the aggrieved party can approach court if his fundamental rights are violated.

29. (2) 42nd Amendment (1976) is sometimes called a "mini-Constitution". It brought about the most wide-spread changes to the Constitution in its history.

Almost all parts of the Constitution, including the Preamble and amending clause, were changed by the 42nd Amendment and some new articles and sections were inserted.

30. (3) **Brihadeswara Temple –** Thanjavur, Tamil Nadu.

Dilwara Temple – Mount Abu, Rajasthan

Lingaraja Temple – Bhubaneshwar, Odisha

Hampi Group Monuments – Ballari, Karnataka.

31. (1) **Battle of Plassey:** It was fought between Nawab Siraj-ud-Daulah, the last independent Nawab of Bengal and the British East India Company under Robert Clive on 23 June, 1757.

32. (1) The Alps are the highest and most extensive mountain range system that lies entirely in Europe. It stretches approximately 1,200 kilometres across eight Alpine countries: France, Switzerland, Italy, Monaco, Liechtenstein, Austria, Germany and Slovenia.

33. (2) **Inter Tropical Convergence Zone (ITCZ):** It is a belt of low pressure which circles the Earth generally near the equator where the trade winds of the Northern and Southern Hemispheres come together.

34. (4) **Mycoplasma:** It is a genus of bacteria that lacks a cell wall around their cell membrane. Without a cell wall, they are unaffected by many common antibiotics such as penicillin or other beta-lactam antibiotics that target cell wall synthesis.

35. (2) The mitochondria is called the powerhouse of the cell because it is responsible for producing most of the cell's energy, or adenosine tri-phosphate (ATP).

36. (2) Pneumatophores are spongy erect roots extending above the surface of the water that facilitate the exchange of oxygen and carbon dioxide for the roots.

37. (2) The pitch of a sound is determined by the frequency of vibration of the sound waves. Frequency is often measured in units called Hertz (Hz).

38. (3) The photoelectric effect supports a particle theory of light in that it behaves like an elastic collision (one that conserves mechanical energy) between two particles, the photon of light and the electron of the metal.

39. (4) Charles Babbage, an English mathematician, as the father of modern computer.

40. (3) Calcium hypochlorite, an inorganic compound with formula $Ca(ClO)_2$, is commonly known as bleaching powder.

41. (1) Elements in the same group in the periodic table have similar chemical properties. This is because their atoms have the same number of electrons in the outer orbital.

42. (2) Nickel allergy is one of the most common causes of contact allergic dermatitis. In affected individuals, dermatitis (eczema) develops in places where nickel-containing metal is touching the skin.

43. (3) **Pregnancy Aid Scheme:** On 31 December 2016, Prime Minister Narendra Modi announced new schemes including ₹ 6,000 pregnancy aid scheme. The scheme aims to bring down the maternal mortality rate.

44. (2) Ian Donald, a Scottish physician pioneered the use of diagnostic ultrasound in medicine. Ultrasound has become an important aid to diagnosing fetal progress during pregnancy.

45. (4) Summer Olympics 2020 – Tokyo, Japan

Summer Olympics 2016 – Rio de Janeiro, Brazil

Summer Olympics 2012 – London, United Kingdom.

46. (1) **Namami Brahmaputra River Festival:** The river festival of India in the North East was inaugurated by President Pranab Mukherjee in Guwahati on 31 March, 2017. The festival is 'India's largest river festival' and was organised across 21 districts of the state.

47. (1) Rajiv Gandhi Khel Ratna Award for the year 2016 to P.V. Sindhu, Sakshi Malik, Dipa Karmakar and Jitu Rai. It was for the first time that the nation's highest sporting award was conferred on four athletes.

48. (2) **Akhada:** The authorised Biography of Mahavir Singh Phogat is authored by Saurabh Duggal.

49. (1) **Monash University Institute of Railway Technology (IRT):** Railway research centre in Australia, in March 2017, entered into an agreement with Dedicated Freight Corridor Corporation of India (DFCCIL), under the administrative control of Ministry of Railways for the establishment of a new applied research and development institute in India known as SRESTHA (Special Railway Establishment for Strategic Technology & Holistic Advancement).

50. (4) **Kaladan Multi-Modal Transit Transport Project :** It is a project that will connect the eastern Indian seaport of Kolkata with Sittwe seaport in Rakhine State, Myanmar by sea.

PART-III
(QUANTITATIVE APTITUDE)

51. (4) Three positive consecutive natural numbers = x, $x + 1$ and $x + 2$

According to question,

$[x + x + 1 + x + 2]^2 - [x^2 + (x + 1)^2 + (x + 2)^2] = 292$

or, $[3x + 3]^2 - [x^2 + x^2 + 1 + 2x + x^2 + 4 + 4x] = 292$

or, $9x^2 + 9 + 18x - 3x^2 - 6x - 5 = 292$

or, $6x^2 + 12x + 4 - 292 = 0$

or, $x^2 + 2x - 48 = 0$

or, $x^2 + 8x - 6x - 48 = 0$

$x(x + 8) - 6(x + 8) = 0$

$(x + 8)(x - 6) = 0$

$\Rightarrow x = 6$

Largest of the three numbers

$= x + 2 = 6 + 2 = 8$

52. (4) A can complete the work

$= 8 \times 6 = 48$ hours

B can complete the work

$= 10 \times 4 = 40$ hours

$\therefore$ A's 1 hour's work $= \frac{1}{48}$

B's 1 hour's work $= \frac{1}{40}$

(A + B)'s 1 hour's work

$= \frac{1}{48} + \frac{1}{40} = \frac{11}{240}$

$\therefore$ Both A and B will finish the work

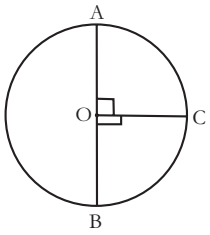
$= \frac{240}{11}$ hours

They need to work in a day $= \frac{240}{11 \times 5}$

$= \frac{48}{11} = 4\frac{4}{11}$ hours

53. (3) Arc BC = 44 cm

$\angle BOC = 90°$



The length of Arc = 44

$$\frac{2\pi r 90}{260} = 44$$

or, $r = \frac{7 \times 360}{90}$

$\therefore$ $r = 28$ cm

54. (3) Marked price and cost price of the article = x and 100

According to question,

$$x \times \frac{75}{100} = 100 \times \frac{85}{100}$$

$$x = \frac{340}{3}$$

If the article is sold at marked price,

Required profit

$= \frac{\frac{340}{3} - 100}{100} \times 100 = 13.33\%$

55. (3) Ratio = 24 : 36 : 84 = 2 : 3 : 7

The quantity of A in the third box

$= 84 \times \frac{2}{12} = 14$ kg

56. (3) Number of boys in the group = x

According to question,

$35.7 \times x = 36 \times x - 42 + 30$

$\Rightarrow$ $35.7x = 36x - 12$

$\Rightarrow$ $0.3x = 12$

$\therefore$ $x = 40$

57. (4) Cost price of calculator = ₹ 100

Selling price $= \frac{115}{100} \times 100$

= ₹ 115

New selling price = 115 × 3

= ₹ 345

Profit percentage

$= \frac{345 - 100}{100} \times 100 = 245\%$

58. (2) Number of votes polled for loosing candidate

$$= \frac{15400 \times (100 - 70)}{70 - 30}$$

$$= \frac{15400 \times 30}{40}$$

$$= 11550$$

59. (3) Downstream speed = x km/h

Upstream speed = y km/h

According to question,

$$\frac{4}{x} + \frac{4}{y} = 1 \quad \text{... (i)}$$

$$\frac{5}{x} + \frac{3}{y} = \frac{55}{60} \quad \text{... (ii)}$$

On solving equations (i) and (ii),

$x = 12$, $y = 6$

Speed of boat in still water

$= \frac{12 + 6}{2} = 9$ km/h

60. (2) Rate of interest = r%

According to question,

$$\frac{9500 \times 10 \times r}{100} = 9500 \times \frac{130}{100}$$

$\therefore$ $r = 13\%$

61. (4) $x^6 - 18x^3 + k$

$= (x^3)^2 - 2 \times x^3 \times 9 + k$

$[\because (a-b)^2 = a^2 - 2ab + b^2]$

$\therefore$ $k = 9^2 = 81$

62. (4) $\frac{\sqrt{5+x} + \sqrt{5-x}}{\sqrt{5+x} - \sqrt{5-x}} = 3$

$$\Rightarrow \frac{\sqrt{5+x} + \sqrt{5-x} + \sqrt{5+x} - \sqrt{5-x}}{\sqrt{5+x} + \sqrt{5-x} - \sqrt{5+x} + \sqrt{5-x}}$$

$= \frac{3+1}{3-1}$

$\Rightarrow \frac{2\sqrt{5+x}}{2\sqrt{5-x}} = \frac{4}{2}$

$\Rightarrow \frac{\sqrt{5+x}}{\sqrt{5-x}} = 2$

$\Rightarrow \frac{5+x}{5-x} = 4$

$\Rightarrow$ $5 + x = 20 - 4x$

$\Rightarrow$ $5x = 15$

$\therefore$ $x = 3$

63. (4) $x + y + z = 12$,

$xy + yz + zx = 44$,

$xyz = 48$

$(x + y + z)^2 = x^2 + y^2 + z^2 + 2(xy + yz + zx)$

$(12)^2 = x^2 + y^2 + z^2 + 2 \times 44$

$x^2 + y^2 + z^2 = 144 - 88$

$x^2 + y^2 + z^2 = 56$

$x^3 + y^3 + z^3 - 3xyz = (x + y + z)$

$(x^2 + y^2 + z^2 - xy - yz - zx)$

$x^3 + y^3 + z^3 - 3 \times 48 = 12 \times (56 - 44)$

$x^3 + y^3 + z^3 = 12 \times 12 + 144$

$= 144 + 144$

$x^3 + y^3 + z^3 = 288$

64. (2) $x = \frac{4\sqrt{ab}}{\sqrt{a} + \sqrt{b}}$

$$= \frac{2\sqrt{a} \times 2\sqrt{b}}{\sqrt{a} + \sqrt{b}}$$

or, $\frac{x}{2\sqrt{a}} = \frac{2\sqrt{b}}{\sqrt{a} + \sqrt{b}}$

By componendo and dividendo,

$$\frac{x + 2\sqrt{a}}{x - 2\sqrt{a}} = \frac{2\sqrt{b} + \sqrt{a} + \sqrt{b}}{2\sqrt{b} - \sqrt{a} - \sqrt{b}}$$

$$= \frac{\sqrt{a} + 3\sqrt{b}}{\sqrt{b} - \sqrt{a}} \quad \text{... (i)}$$

Similarly,

$$\frac{x}{2\sqrt{b}} = \frac{2\sqrt{a}}{\sqrt{a} + \sqrt{b}}$$

or, $\frac{x + 2\sqrt{b}}{x - 2\sqrt{b}} = \frac{2\sqrt{a} + \sqrt{a} + \sqrt{b}}{\sqrt{a} - \sqrt{b}}$

$$= \frac{3\sqrt{a} + \sqrt{b}}{\sqrt{a} - \sqrt{b}} \quad \text{... (ii)}$$

$\therefore$ $\frac{x + 2\sqrt{a}}{x - 2\sqrt{a}} + \frac{x + 2\sqrt{b}}{x - 2\sqrt{b}}$

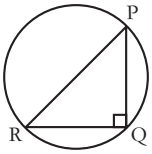
$= \frac{\sqrt{a} + 3\sqrt{b}}{\sqrt{b} - \sqrt{a}} - \frac{3\sqrt{a} + \sqrt{b}}{\sqrt{b} - \sqrt{a}}$

$= \frac{\sqrt{a} + 3\sqrt{b} - 3\sqrt{a} - \sqrt{b}}{\sqrt{b} - \sqrt{a}}$

$= \frac{2(\sqrt{b} - \sqrt{a})}{\sqrt{b} - \sqrt{a}} = 2$

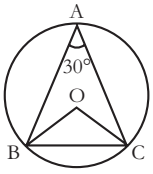
65. (3) PQ = 12 cm, QR = 5 cm,

$\angle Q = 90°$



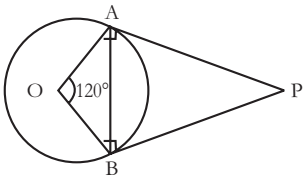
$(PR)^2 = (PQ)^2 + (QR)^2$
$= (12)^2 + (5)^2$
$(PR)^2 = 144 + 25 = 169$
$PR = 13$
Radius of circum-circle
$= \frac{PR}{2} = \frac{13}{2} = 6.5$ cm

66. (1) $\angle BAC = 30°$
$\angle BOC = 2 \times \angle BAC = 2 \times 30° = 60°$
[$\because$ The angle at the centre is twice the angle at the circumference.]
In ΔOBC,



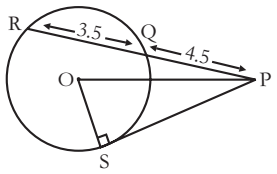
$OB = OC =$ radius
$\therefore \quad \angle OBC = \angle OCB$
$= \angle BOC = 60°$
$OB = OC = BC$
Required ratio = OB : BC = 1 : 1

67. (4) AP = 6 cm



$\because \quad AP = BP$
$\therefore \quad BP = 6$ cm
$\angle AOB = 120°$
$\therefore \quad \angle APB = 180° - 120°$
$= 60°$
$\because \quad AP = BP$
$\therefore \quad \angle BAP = \angle ABP$
Hence, ΔABP is an equilateral triangle
Area of $\Delta ABP = \frac{\sqrt{3}}{4}(6)^2$
$= 9\sqrt{3}$ cm^2

68. (3) $(SP)^2 = PQ \times PR = PQ\,[PQ + QR]$
$(SP)^2 = 4.5\,[4.5 + 3.5]$
$(SP)^2 = 36$
$SP = 6$



In ΔOSP,
$(SP)^2 = (OP)^2 - (SP)^2$
$(OS)^2 = (6.5)^2 - (6)^2$
$OS = \sqrt{6.25}$
$OS = 2.5$ cm

69. (3) $\frac{1}{1 - \tan\theta} - \frac{1}{1 + \tan\theta}$
$= \frac{1 + \tan\theta - 1 + \tan\theta}{1 - \tan^2\theta}$
$= \frac{2\tan\theta}{1 - \tan^2\theta}$
$= \tan 2\theta$

70. (4) $\tan\theta + \cot\theta = x$
$\tan^2\theta + \cot^2\theta + 2\tan\theta\cot\theta = x^2$
$\tan^2\theta + \cot^2\theta + 2 = x^2$
$\tan^2\theta + \cot^2\theta = x^2 - 2$
$\tan^4\theta + \cot^4\theta + 2\tan^2\theta\cot^2\theta$
$= x^4 + 4 - 4x^2$
$\tan^4\theta + \cot^4\theta = x^4 - 4x^2 + 4 - 2$
$\tan^4\theta + \cot^4\theta = x^2 - (x^2 - 4) + 2$

71. (4) $\tan^2\theta + \cot^2\theta = 2$
$\tan^2\theta + \cot^2\theta - 2 = 0$
$\tan^2\theta + \cot^2\theta - 2\tan\theta\cot\theta = 0$
$(\tan\theta - \cot\theta)^2 = 0$
$\tan\theta = \cot\theta$
$\tan\theta = \tan(90 - \theta)$
$\theta = 90 - \theta$
$2\theta = 90$
$\theta = 45°$
$2^{\sec\theta\,.\,\mathrm{cosec}\,\theta} = 2^{\sec 45°\,\mathrm{cosec}\,45°}$
$= 2^{\sqrt{2}\times\sqrt{2}}$
$= 2^2 = 4$

72. (2) Required increase percentage
$= \frac{122 - 65}{65} \times 100 = 87.69\%$

73. (3) Required answer = Bank 1, Bank 4 and Bank 5.

74. (1) I. $= \frac{295}{122} = 2.41$
II. $= \frac{211}{123} = 1.71$
$\therefore \quad I > II$

75. (3) Bank 1 $= \frac{352 - 265}{265} \times 100$
$= 32.83\%$
Bank 2 $= \frac{122 - 65}{65} \times 100$
$= 87.69\%$
Bank 3 $= \frac{211 - 138}{138} \times 100$
$= 52.89\%$
Bank 4 $= \frac{157 - 109}{109} \times 100$
$= 44.03\%$
Bank 5 $= \frac{158 - 80}{80} \times 100$
$= 97.5\%$
Bank 5 > Bank 2 > Bank 3 > Bank 4 > Bank 1

PART-IV (ENGLISH LANGUAGE)

76. (3) In the given sentence, part (3) has an error. To correct the sentence use 'to visit' in place of 'visit'.

77. (2) In the given sentence, part (2) has an error. To correct the sentence use 'greater' in place of 'the greater'.

78. (2) **Fall Through:** to not be completed or not happen.
Sentence → Our plans fell through because of lack of money.

79. (4) **Within:** before a particular period of time has passed.

80. (2) **Surreptitious/Secret (Adjective):** done secretly; hidden; furtive.
Sentence → She sneaked a surreptitious glance at her watch.

81. (1) **Inanition/Lethargy (Noun):** The state of not having any energy or enthusiasm for doing things, listlessness; inertia.
Sentence → After a period of enforced inanition, she found a new job.

82. (3) Opposite of Imbroglio is
Composure (Noun): the state of being calm and in control of your feelings or behaviour; self control; tranquillity.
Sentence → Russia became anxious to withdraw its soldiers from the Syria imbroglio.

83. (4) Opposite of Bequest is

Withdraw (Verb): to stop giving or offering something. Its correct antonym should be withdrawal.

Sentence → He left a bequest to each of his grandchildren.

84. (3) **Adam's ale:** water; aqua.

Sentence → A waitress asked him what he wanted to drink and he said, 'Adam's Ale.

85. (3) **At one's wits end:** to be so worried by a problem that you do not know what to do next; to get puzzled.

Sentence → Scientists are at their wits end as to why the whale had swum to the shore.

86. (1) For improvement of sentence use 'done for' in place of 'done with'.

87. (3) For improvement of sentence use 'picked at' in place of 'picked up'.

88. (3) Best substitute of the sentence is

Abdicate (Verb): to give up being King or Queen.

The Queen abdicated in favour of her son.

89. (4) Best substitute of the sentence is

Epitah (Noun): a short piece of writing about someone who is dead, often carved on their grave.

Several epitaphs from the past have been preserved in the cathedral.

90. (3) Correctly spelt word → Sedentary.

91. (1) Correctly spelt word → Chauffeur.

92. (4) Logical order of the sentences to form a coherent paragraph → QPRS.

93. (3) Logical order of the sentences to form a coherent paragraph → QRPS.

94. (2) Passive/Active Voice.

An essay will be written by me.

95. (4) Indirect/Direct Speech

Neha asked if she had to write a letter.

96. (3) Best option for blank → happy

97. (1) Best option for blank → distinctly.

98. (2) Best option for blank → thinkers.

99. (4) Best option for blank → simple.

100. (1) Best option for blank → gratification.

❑❑❑

15 SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 10 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Canada : Ottawa : : ? : ?
(1) Egypt : Cairo
(2) Norway : Havana
(3) France : Rome
(4) Kenya : Teheran

2. JQXE : LSZG : : MTNL : ?
(1) OPVN (2) KRPN
(3) OVPN (4) OPLI

3. 7 : 48 : : 11 : ?
(1) 120 (2) 121
(3) 131 (4) 170

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Square (2) Rectangle
(3) Cylinder (4) Triangle

5. (1) A (2) S
(3) U (4) I

6. (1) 216 (2) 125
(3) 343 (4) 510

7. Arrange the given words in the sequence in which they occur in the dictionary.
1. Dragon 2. Draculla
3. Dormont 4. Drapery
5. Deviate
(1) 53214 (2) 53124
(3) 53421 (4) 53412

Directions (8–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

8. KV, LU, MT,?
(1) NS (2) OS
(3) OU (4) SN

9. 3, 4, 5, 4, 9, 10, 6, 16, 15, 9, 25, 20, 13, 36,?
(1) 17 (2) 25
(3) 28 (4) 31

10. The ratio of present ages of Anil and Aakash is 4 : 5. Three years later their ages will be in ratio 7 : 8. What is the present age (in years) of Anil?
(1) 8 years (2) 6 years
(3) 4 years (4) 10 years

11. Karan remembers that his sister's birthday is not after 18th August. Karan's mother remembers that Karan's sister birthday is before 20th August but after 17th August. On which date of August is Karan's sister birthday?
(1) 18 (2) 17
(3) 19 (4) 20

12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
Superconductors
(1) Sports (2) Spunt
(3) Stem (4) Spectrum

13. In a certain code language, "PEN-TAN" is written as "0". How is "DEN-COB" written in that code language?
(1) 8 (2) 3
(3) 9 (4) 7

14. If "÷" denotes "multiplied by", "+" denotes "subtracted from", "–" denotes "added to" and "×" denotes "divided by", then which of the following equation is true?
(1) 16 + 19 × 21 – 5 = 201
(2) $5 \times 6 + 4 \div 3 = \frac{37}{6}$
(3) 6 × 3 + 12 ÷ 3 = 21
(4) 18 × 6 ÷ 8 – 12 = 36

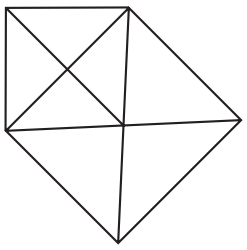
15. If 5 # 9 @ 7 = 52 and 3 @ 9 # 2 = – 89, then 7 # 6 @ 9 = ?
(1) 67 (2) 56
(3) 43 (4) 28

16. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

3	17	2	16	6	13
11	4	10	7	15	?

(1) 1 (2) 2
(3) 3 (4) 4

17. How many triangles are there in the given figure?



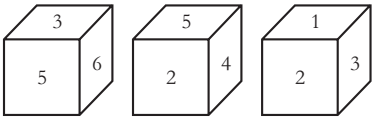
(1) 12 (2) 13
(3) 15 (4) 18

18. In each of the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements?

Statements:
All stars are white.
All white are moon.
No moon is blue.

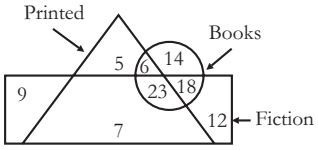
Conclusions:
I. Some moon are stars.
II. No blue is stars.
III. Some white are stars.
IV. Some blue are white.
(1) Conclusions I, II and III follow
(2) Conclusions III and IV follow
(3) Conclusions I, II and IV follow
(4) Conclusions II, III and IV follow

19. Three positions of a cube are shown below. What will come opposite to face containing '5'?



(1) 1 (2) 3
(3) 4 (4) 6

20. In the given figure, how many books are fiction?

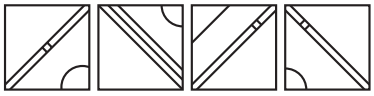


(1) 23 (2) 18
(3) 53 (4) 41

21. Which answer figure will complete the pattern in the question figure?

Question Figure

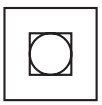
Answer Figures



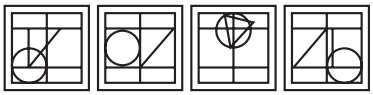
(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure



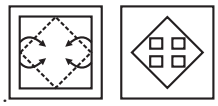
Answer Figures



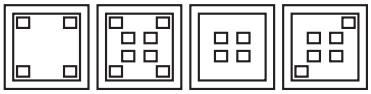
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figures



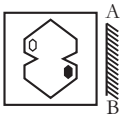
Answer Figures



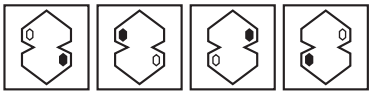
(1) (2) (3) (4)

24. If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The set of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'P' can be represented by 32, 44 etc., and 'U' can be represented by 76, 88 etc. Similarly, you have to identify the set for the word "PALE".

Matrix-I

	0	1	2	3	4
0	R	P	S	I	A
1	I	A	R	P	S
2	P	S	I	A	R
3	A	R	P	S	I
4	S	I	A	R	P

Matrix-II

	5	6	7	8	9
5	L	E	U	G	J
6	G	J	L	E	U
7	E	U	G	J	L
8	J	L	E	U	G
9	U	G	J	L	E

(1) 43, 23, 55, 56
(2) 33, 30, 67, 75
(3) 11, 42, 86, 98
(4) 20, 04, 79, 87

PART-II
(GENERAL AWARENESS)

26. Which among the following is not an account under Balance of Payment?
(1) Current Account
(2) Capital Account
(3) Official Reserves Account
(4) Unilateral Payments Account

27. Match the following:

Term		Meaning
1. Globalisation	a.	Process of reducing or removing restrictions on international trade.
2. Privatisation	b.	Process of interaction and integration among the people, companies and government of different nations.
3. Liberalisation	c.	Called as denationalization or disinvestment.

(1) 1-c, 2-a, 3-b
(2) 1-b, 2-c, 3-a
(3) 1-b, 2-a, 3-c
(4) 1-c, 2-b, 3-a

28. Who appoints Governor of a state in India?
(1) Prime Minister of India
(2) Council of Minister
(3) Judge of Supreme Court
(4) President of India

29. What is the literal meaning of 'Certiorari'?
(1) We command
(2) To have the body of prisoner
(3) To forbid
(4) To be certified (or) to be informed

30. Which among the following Mughal Emperor was illiterate?
(1) Shah Jahan (2) Aurangzeb
(3) Akbar (4) Jahangir

31. Where was the 'Azad Hind Fauj' founded?
(1) Singapore (2) Thailand
(3) Britain (4) Italy

32. Strait of Malacca separates which two land masses?
(1) Malay Peninsula and Indonesian Island of Sumatra
(2) Africa and Europe
(3) India and Sri Lanka
(4) North America and South America

33. The latitude which passes through Sikkim also passes through ..... .
(1) Haryana
(2) Rajasthan
(3) Uttarakhand
(4) Himachal Pradesh

34. Which of the following is not a plant hormone?
(1) Gibberellins (2) Auxins
(3) Cytokinins (4) Thyroxin

35. Nephron is related to which of the following system of human body?
(1) Circulatory System
(2) Excretory System
(3) Reproductive System
(4) Respiratory System

36. Which Vitamin is obtained from Sun rays?
(1) Vitamin A (2) Vitamin C
(3) Vitamin K (4) Vitamin D

37. Speed of light is maximum in ..... .
(1) Vaccum (2) Solids
(3) Liquids (4) Gases

38. What is the S.I. unit of electric current?
(1) Newton (2) Joule
(3) Ampere (4) Watt

39. An I.P. address is ..... bit number.
(1) 8 (2) 32
(3) 64 (4) 104

40. Process of loosing electrons is known as ..... .
(1) Oxidation
(2) Reduction
(3) Radiation
(4) Both oxidation and reduction

41. Anions are formed by ..... .
(1) Losing of electrons
(2) Gaining of electrons
(3) Gaining of neutrons
(4) Losing of neutrons

42. Which among the following is the major cause of acid rain?
(1) Carbon dioxide
(2) Carbon monoxide
(3) Nitrogen dioxide
(4) Oxygen

43. First state to implement Saur Sujala Yojana is ..... .
(1) Chhattisgarh (2) Uttaranchal
(3) Gujarat (4) Maharashtra

44. Who is known for the invention of 'World Wide Web'?
(1) Sir Tim-Berners-Lee
(2) Maxwell
(3) Martin Cooper
(4) S.A. Forbes

45. B. Sai Praneeth is associated with which of the following sport?
(1) Hockey (2) Badminton
(3) Chess (4) Boxing

46. Which of the following pair is incorrect?
(1) Muthuswami Dikshitar – Carnatic Music
(2) Parveen Sultana – Singer
(3) M.S. Gopalakrishnan – Violinist
(4) Nandlal Bose – Flute

47. Who among the following is the 2017 Asian Award recipient for the outstanding achievement in Cinema?
(1) Kunal Nayyar
(2) Vishal Bhardwaj
(3) Om Puri
(4) Zeishan Quadri

48. Who amongst the following is the author of the book "Rekha: The Untold Story" a biography on veteran actress Rekha?
(1) Yasser Usman
(2) Anand Neelakantan
(3) Ram Kamal Mukherjee
(4) K. Vijay Kumar

49. Which among the following country exited from Trans Pacific Partnership (TPP) in January 2017?
(1) Japan (2) USA
(3) Mexico (4) Brunei

50. Which of the following country doesn't matches to its famous tourist place?
(1) China – Great Wall of China
(2) Bhutan – Paro Taktsang
(3) Nepal – Pashupatinath Temple
(4) Sri Lanka – Padmanabhaswamy Temple

PART-III (QUANTITATIVE APTITUDE)

51. How many numbers are there from 2000 to 7000 which are both perfect squares and perfect cubes?
(1) 0 (2) 1
(3) 2 (4) 3

52. 3 men or 4 women can complete a job in 120 days. 12 men and 16 women will complete the same job in how many days?
(1) 12 days (2) 14 days
(3) 15 days (4) 18 days

53. If the diameter of a hemisphere is 21 cm, then what is the volume (in cm^3) of hemisphere?

(1) 2810 cm^3 (2) 1250.5 cm^3
(3) 1725.25 cm^3 (4) 2425.5 cm^3

54. After two successive discounts of 20% and 12% an article is sold for ₹ 16,896/-. What is the marked price (in ₹) of the article?
(1) ₹ 21,500/- (2) ₹ 23,800/-
(3) ₹ 22,000/- (4) ₹ 24,000/-

55. The ratio of speed of three racers is 3 : 4 : 6. What is the ratio of time taken by the three racers to cover the same distance?
(1) 3 : 4 : 6 (2) 6 : 4 : 3
(3) 4 : 3 : 2 (4) 2 : 3 : 5

56. In a match, average of runs scored by 7 players is 53. If the runs scored by 6 players are 121, 40, 26, 56, 37 and 48, then how many runs did the 7th player scored?
(1) 26 (2) 37
(3) 43 (4) 48

57. Mohit buys an old bicycle for ₹ 2,700/- and spends ₹ 500/- on its repairs. If he sells the bicycle for ₹ 3,520/-, then what is his profit percentage?
(1) 10% (2) 12.5%
(3) 15% (4) 20%

58. If the price of onion increases from ₹ 24 per kg to ₹ 36 per kg, then by what percentage a household should decrease the consumption of onion so that expenditure remains same?
(1) 25% (2) 33.33%
(3) 50% (4) 20%

59. A train travels 20% faster than a car. Both start from point A at the same time and reach point B, 180 km away at the same time. On the way the train takes 30 minutes for stopping at the stations. What is the speed (in km/h) of the train?
(1) 56 km/h (2) 66 km/h
(3) 72 km/h (4) 80 km/h

60. A sum of ₹ 720/- amounts to ₹ 882/- at simple interest in $1\frac{1}{2}$ years. In how many years will the sum ₹ 800/- amounts to ₹ 1,040/- at the same rate?
(1) 3 years (2) 2 years
(3) 4 years (4) 6 years

61. If $\left(\frac{x}{y}\right)^{a-4} = \left(\frac{y}{x}\right)^{2a-5}$ then what is the relation between x and y?
(1) $x > y$
(2) Cannot be determined
(3) $x < y$
(4) $x = y$

62. If $x + \frac{1}{x} = 3$, then what is the value of $\frac{x^4 + 5x^3 + 3x^2 + 5x + 1}{x^4 + 1}$?
(1) $\frac{25}{7}$ (2) 4
(3) $\frac{31}{7}$ (4) $\frac{33}{7}$

63. If $3a - \left(\frac{3}{a}\right) - 3 = 0$, then what is the value of $a^3 - \left(\frac{1}{a^3}\right) + 2$?
(1) 0 (2) 2
(3) 7 (4) 6

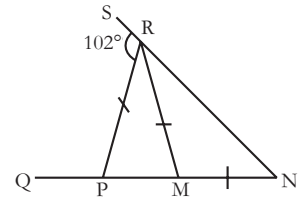
64. If $\frac{x + \sqrt{x^2 - 1}}{x - \sqrt{x^2 - 1}} + \frac{x - \sqrt{x^2 - 1}}{x + \sqrt{x^2 - 1}} = 194$, then what is the value of x?
(1) $\frac{7}{2}$ (2) 4
(3) 7 (4) 14

65. In ΔABC, AD is the median and AD = $\left(\frac{1}{2}\right)$ BC. If ∠ACD = 40°, then what is the value (in degrees) of ∠DAB?
(1) 30° (2) 40°
(3) 50° (4) 80°

66. Circum-centre of ΔABC is O. If ∠BAC = 75° and ∠BCA = 80°, then what is the value (in degrees) of ∠OAC?
(1) 45° (2) 65°
(3) 90° (4) 95°

67. Smaller diagonal of a rhombus is equal to length of its sides. If length of each side is 4 cm, then what is the area (in cm^2) of an equilateral triangle with side equal to the bigger diagonal of the rhombus?
(1) 6 cm^2 (2) $9\sqrt{3}$ cm^2
(3) 12 cm^2 (4) $12\sqrt{3}$ cm^2

68.



In the given figure, MN = RM = RP, then what is the value (in degrees) of ∠MPR?
(1) 47°
(2) 68°
(3) 72°
(4) Cannot be determined

69. What is the simplified value of (cos A + sin A) (cot A + tan A)?
(1) sec A + cosec A
(2) sin A + cos A
(3) tan A + cot A
(4) sec A – cosec A

70. What is the simplified value of $\sqrt{\frac{\text{cosec A}}{\text{cosec A} - 1} + \frac{\text{cosec A}}{\text{cosec A} + 1}}$?
(1) $\sqrt{2}$ sec A (2) $\sqrt{2}$ cosec A
(3) $\sec^2$ A (4) 2 sec A

71. If 2 cos θ = 2 – sin θ, then what is the value of cos θ?
(1) 1 or $\frac{3}{5}$ (2) 1 or $-\frac{1}{2}$
(3) – 1 or $-\frac{1}{2}$ (4) – 1 or $\frac{3}{5}$

Directions (72–75): The table given below shows the ratio of exports and imports of a country for 5 years.

Total Trade = Exports + Imports

Year	Exports: Imports
Year 1	10 : 9
Year 2	11 : 7
Year 3	4 : 3
Year 4	5 : 8
Year 5	12 : 13

72. If the total trade of the country in Year 3 was 1183 crore dollars, then what was the difference (in

crore dollars) between exports and imports of the country in that year?
(1) 169 (2) 173
(3) 142 (4) 158

73. The total trade for Year 2 and Year 4 is same. If exports of Year 4 are 315 crore dollars, then what are the imports (in crore dollars) of Year 2?
(1) 306.4 (2) 309.8
(3) 323.7 (4) 318.5

74. Total trade of Year 1 is twice of the total trade of Year 5. If total trade of Year 1 is 5700 crore dollars, then what is the difference (in crore dollars) in exports of Year 1 and Year 5?
(1) 1835 (2) 1632
(3) 1368 (4) 1423

75. The total trade of 5 years is 3800, 3600, 2800, 3900 and 5000 crore dollars respectively. What is the difference (in crore dollars) in the average exports and average imports respectively?
(1) 60 (2) –60
(3) –90 (4) 120

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. On Sundays (1)/ I prefer reading (2)/ than going out visiting my friends. (3)/ No error (4)

77. Rohit is two year (1)/ junior than Mukesh (2)/ in the office. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. God is ..... .
(1) Immanent (2) Mortal
(3) Imminent (4) Deference

79. Riya ..... her matriculation examination in 2016.
(1) Completed (2) Passed
(3) Obtained (4) Gathered

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Articulate
(1) Dominate (2) Distinct
(3) Helpers (4) Unsteady

81. Ascend
(1) Lay (2) Climb
(3) Weaken (4) Void

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Waggish
(1) Jocular (2) Whimsical
(3) Flippant (4) Solemn

83. Desecrate
(1) Sanctify (2) Profane
(3) Befoul (4) Defile

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. Will-o-the wisp
(1) Something that is impossible to get or achieve
(2) To keep off an unwanted and undesirable person
(3) To spend recklessly
(4) Accept or leave the offer

85. To go through fire and water
(1) To scold someone
(2) To experience many dangers in order to achieve something
(3) To act without restraints
(4) Something which hurts

Directions (86–87): Improve the **bold** part of the sentence.

86. We do not **agree on** certain things.
(1) agree to
(2) agree about
(3) agree of
(4) No improvement

87. There are two pens here and **either write** well.
(1) either have written
(2) either wrote well
(3) either writes
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

88. A strong blast of wind
(1) Implosion
(2) Trickle
(3) Gust
(4) Mantle

89. Phobia of dogs
(1) Orophobia
(2) Cynophobia
(3) Vatrachophobia
(4) Phemophobia

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Bulettin (2) Barrage
(3) Buoyant (4) Beginner

91. (1) Guidance (2) Ambassador
(3) Handkercheif (4) Labourer

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. P. He was a funny looking man with a high, bald, done shaped head, a face very small in comparison and a long wavy beard.
Q. He didn't work at his trade-a stonecutter, more than what was necessary to keep his wife and three boys alive.
R. His unusual features were standing a joke among his friends.
S. He was a poor man-an idler.
(1) PRQS (2) QPSR
(3) RQPS (4) SRPQ

93. P. When all the credit worthy people were given loans to a logical limit, they ceased to be a part of the market.
Q. Even this would have been understandable if it could work as an eye opener.
R. Owing to the materialistic culture elsewhere, it was possible to keep selling newer products to the consumers despite having existing ones which served equally well.
S. They were lured through advertising and marketing techniques of 'dustbinisation' of the customer; and then finally, once they became ready customers, they were given loans and credits to help them by more and more.
(1) PRQS
(2) RSPQ
(3) QSPR
(4) RPQS

94. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
John was arrested on a charge of murder, but for lack of evidence he was released.
(1) The police arrested John on a charge of murder, but for lack of evidence released him.
(2) John was arrested on a charge of murder but was released for lack of evidence.
(3) The police arrested John on a charge of murder, but for lack of evidence he was released.
(4) John had been arrested on a charge of murder, but for lack of evidence he had been released.

95. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
He said, "I saw a snake here."
(1) He said that he had seen a snake there.
(2) He said that he saw a snake here.
(3) He said that he saw a snake there.
(4) He said that he had seen a snake.

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Morality is ...**96**... with ethics and symbolises the doctrine of actions right or wrong. Politics is the ...**97**... of expediency and need not always be ...**98**.... . If something is wrong and ...**99**... expedient, it cannot be ...**100**... .

96. (1) Discussed (2) Identified (3) Recognised (4) Rectified
97. (1) Source (2) Collection (3) Requirement (4) Notion
98. (1) Wrong (2) Right (3) Neutral (4) Different
99. (1) Merely (2) Essentially (3) Surely (4) Hardly
100. (1) Justifiable (2) Relevant (3) Acquired (4) Immoral

Short Answers

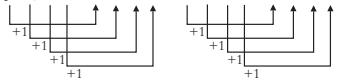
1. (1)	**2.** (3)	**3.** (1)	**4.** (3)	**5.** (2)	**6.** (4)	**7.** (1)	**8.** (1)	**9.** (2)	**10.** (3)
11. (1)	**12.** (4)	**13.** (2)	**14.** (4)	**15.** (1)	**16.** (1)	**17.** (3)	**18.** (1)	**19.** (1)	**20.** (4)
21. (4)	**22.** (2)	**23.** (2)	**24.** (4)	**25.** (4)	**26.** (3)	**27.** (2)	**28.** (4)	**29.** (4)	**30.** (3)
31. (1)	**32.** (1)	**33.** (2)	**34.** (4)	**35.** (2)	**36.** (4)	**37.** (1)	**38.** (3)	**39.** (2)	**40.** (1)
41. (2)	**42.** (3)	**43.** (1)	**44.** (1)	**45.** (2)	**46.** (4)	**47.** (1)	**48.** (1)	**49.** (2)	**50.** (4)
51. (2)	**52.** (3)	**53.** (4)	**54.** (4)	**55.** (3)	**56.** (3)	**57.** (1)	**58.** (2)	**59.** (3)	**60.** (2)
61. (2)	**62.** (1)	**63.** (4)	**64.** (3)	**65.** (3)	**66.** (2)	**67.** (4)	**68.** (2)	**69.** (1)	**70.** (1)
71. (1)	**72.** (1)	**73.** (4)	**74.** (2)	**75.** (1)	**76.** (3)	**77.** (2)	**78.** (1)	**79.** (2)	**80.** (2)
81. (2)	**82.** (4)	**83.** (1)	**84.** (1)	**85.** (2)	**86.** (4)	**87.** (3)	**88.** (3)	**89.** (2)	**90.** (1)
91. (3)	**92.** (1)	**93.** (2)	**94.** (1)	**95.** (1)	**96.** (2)	**97.** (4)	**98.** (2)	**99.** (1)	**100.** (4)

Hints & Solutions

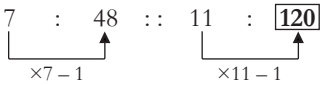
PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (1) As 'Ottawa' is the capital of 'Canada', similarly 'Cairo' is the capital of 'Egypt'.

2. (3) J Q X E : L S Z G :: M T N L : **O V P N**



3. (1) 7 : 48 :: 11 : **120**



4. (3) Cylinder is three dimensional figure while all other are two dimensional figures.

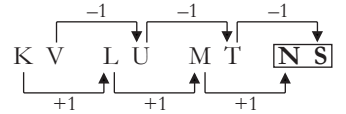
5. (2) S is a consonant while all other are vowels.

6. (4) Except 510, all other are perfect cube numbers.

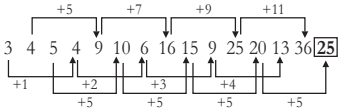
7. (1) Arrangement of words as per dictionary :

Deviate (5) → Dormont (3) → Dracula (2) → Dragon (1) → Drapery (4).

8. (1)



9. (2)



10. (2) Anil's present age = $4x$ years

Aakash's present age = $5x$ years

According to question,

$$\frac{4x+3}{5x+3} = \frac{7}{8}$$

or, $32x + 24 = 35x + 21$

or, $3x = 3$

$\therefore$ $x = 1$

Anil's present age = $4 \times 1 = 4$ years

11. (1) According to the Karan, his sister's birthday is not after 18th August.

According to their mother, Karan's sister's birthday is on 18th or 19th August.

Common date → 18 August.

12. (4) The word 'Spectrum' cannot be formed using the letters of the given word because the word 'Superconductors' does not have 'm' letter.

13. (2) As,

PEN-TAN = (16 + 5 + 14) – (20 + 1 + 14) = 35 – 35 = 0

Similarly,

DEN-COB = (4 + 5 + 14) – (3 + 15 + 2) = 23 – 20 = 3

14. (4)

$\div \Rightarrow \times$	$+ \Rightarrow -$
$- \Rightarrow +$	$\times \Rightarrow \div$

$18 \times 6 \div 8 - 12 = 36$

$18 \div 6 \times 8 + 12 = 36$

$3 \times 8 + 12 = 36$

$24 + 12 = 36$

$36 = 36$

15. (1) 5 # 9 @ 7 = 59 – 7 = 52

3 @ 9 # 2 = 3 – 92 = – 89

$\therefore$ 7 # 6 @ 9 = 76 – 9 = 67

16. (1) As,

3 + 17 + 11 + 4 = 35

2 + 16 + 10 + 7 = 35

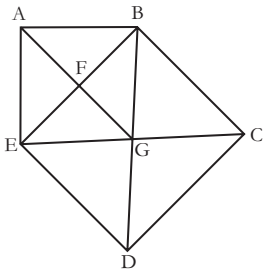
Similarly,

6 + 13 + 15 +? = 35

34 +? = 35

? = 1

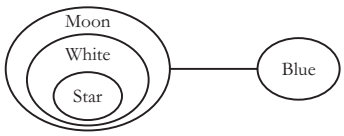
17. (3)



Triangles = FBA, FAE, FEG, FGB, BGC, DGC, DGE, CBD, DCE, BEC, AEG, ABG, GBE, AEB, EDB

$\therefore$ Number of triangles = 15

18. (1)



19. (1) The numbers 2, 3, 4 and 6 are on the faces adjacent to 5. Therefore, '1' lies opposite '5'.

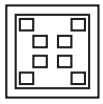
20. (4) Books which are fiction can be represented by the numbers common to the circle and the rectangle. Such numbers are 23 and 18.

Required sum = 23 + 18 = 41

21. (4)

22. (2)

23. (2)



24. (4)

25. (4) P → **20**, 01, 32, 13, 44

A → 30, 11, 42, 23, **04**

L → 55, 86, 67, 98, **79**

E → 75, 56, **87**, 68, 99

For given word PALE, group of letters can be represented by the numbers → 20, 04, 79, 87.

PART-II
(GENERAL AWARENESS)

26. (3) The official reserve account, a subdivision of the capital account, is the foreign currency and securities held by the government, usually by its central bank, and is used to balance the payments from year to year.

27. (2) **Globalisation:** Process of interaction and integration among the people, companies and government of different nations.

Privatisation: Called as denationalisation or disinvestment.

Liberalisation: Process of reducing or removing restrictions on international trade.

28. (4) The Governor is not elected by the process of direct or indirect voting.

The Governor of a state is appointed directly by the President of India, for a period of five years. The Governor is the nominal head of a state.

29. (4) **Certiorari (means certify):** It is a command or order to an inferior Court or tribunal to transmit the records of a cause or matter pending before them to the superior court to be dealt with there and if the order of inferior court is found to be without jurisdiction or against the principles of natural justice, it is quashed.

30. (3) Akbar is a patron of art and culture. During his reign the number of literature books written in various languages and constructed numerous architectural masterpieces. Agra Fort, Buland Darwaza, Fatehpur Sikri, Humayun Tomb, Allahabad Fort, Lahore Fort and his own mausoleum at Sikandra are the famous structures. He started a new sect 'Din-i-Ilahi' by deriving elements from various religions. He did not learn to read or write, but got texts on history, religion, science, philosophy and other topics recited.

31. (1) **Azad Hind Fauj:** Came into existence in 1943, Singapore, it was formed to secure Independence from the British rule by allying with axis powers like Japan. It was inspired by the ideologies of Netaji Subhash Chandra Bose.

32. (1) **The Strait of Malacca:** It is a stretch of water between the Malay Peninsula and the Indonesian island of Sumatra. It is the waterway connecting the Andaman Sea (Indian Ocean) and the South China Sea (Pacific Ocean).

33. (2) The latitude which passes through Sikkim also passes through Rajasthan.

34. (4) Thyroxine is a hormone and plays a crucial role in heart and digestive function, metabolism, brain development, bone health and muscle control.

Five general classes of Plant hormones: auxins, cytokinins, gibberellins, ethylene and abscisic acid.

35. (2) Each of our kidneys contains over a million nephrons. They are the functioning unit of the kidneys. They remove waste from the body and produces urine. Each nephron is made up of two parts: a renal corpuscle and renal tubules.

36. (4) The most common form of vitamin D is vitamin D_3 or cholecalciferol. It is usually produced in the skin of human and animals under the influence of solar or ultraviolet radiation. In plants it can be produced from pro-vitamin ergosterol.

37. (1) The speed of light is maximum in vacuum. When light traveling through the air enters a different medium, such as glass or water, the speed and wavelength of light are reduced although the frequency remains unaltered.

38. (3) SI unit of electric current is ampere, which is the flow of electric charge across a surface at the rate of one coulomb per second. Electric current is measured using a device called an ammeter.

39. (2) The Internet Protocol Address (or IP Address) is a unique address. The traditional IP Address (known as IPv4) uses a 32-bit number to represent an IP address, and it defines both network and host address.

40. (1) Oxidation is the loss of electrons during a reaction by a molecule, atom or ion. It occurs when the oxidation state of a molecule, atom or ion is increased. The opposite process is called reduction, which occurs when there is a gain of electrons or the oxidation state of an atom, molecule, or ion decreases.

41. (1) An anion is an ionic species having a negative charge. They are atoms that have gained electrons. Anions are one of the two types of ions. The other type is called a cation. Anions are attracted to the anode, while cations are attracted to the cathode.

42. (3) The main chemicals in air pollution that create acid rain are sulphur dioxide (SO_2) and nitrogen (NOx). Acid rain usually forms high in the clouds where sulphur dioxide and nitrogen oxides react with water, oxygen and oxidants. This mixture forms a mild solution of sulphuric acid and nitric acid.

43. (1) **Saur Sujala Yojana:** It is a new scheme launched by government in Chhattisgarh for farmers. Under the Saur Sujala Yojana, the state government would provide solar powered irrigation pumps to farmers in Chhattisgarh. The scheme is also aimed at strengthen the agriculture and rural development in rural Chhattisgarh.

44. (1) **World Wide Web (WWW):** It is a network of online content that is formated in HTML and accessed via HTTP. The term refers to all the interlinked HTML pages that can be accessed over the Internet. It was originally designed in 1991 by Tim Berners-Lee.

45. (2) B. Sai Praneeth is Indian badminton player. In 2017, he won the Singapore Open Super Series after beating his compatriot Srikanth Kidambi in rubber games. He is the fourth Indian to win a superseries title after Saina Nehwal, Srikanth Kidambi and P.V. Sindhu.

46. (4) **Nandalal Bose:** He was one of the pioneers of modern Indian art. The artists used gold leaf and colours made from stones to illuminate the text beautifully. He also drew the emblems for the highest awards given by the Government of India such as Bharat Ratna and Padmashri.

47. (1) The Big Bang Theory's Kunal Nayyar was honoured the 6th Annual Asian Awards 2017.

48. (1) The biography of actress Rekha, 'Rekha: The Untold Story' is written by Yasser Usman, published by Jaggernaut.

49. (2) The Trans-Pacific Partnership (TPP), currently changed to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) after the US withdrew, is a trade agreement between Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam.

50. (4) **Padmanabhaswamy Temple:** It is located in Thiruvananthapuram, Kerala. The temple is built in an intricate fusion of the indigenous Kerala style and the Dravidian style of architecture

associated with the temples located in the neighbouring state of Tamil Nadu, featuring high walls and a 16th-century Gopuram.

PART-III (QUANTITATIVE APTITUDE)

51. (2) There is only one number 4096 from 2000 to 7000 which is both perfect square and perfect cube.

$(64)^2 = 4096$

$(16)^3 = 4096$

52. (3) 3 Men = 4 Women

12 Men = 16 Women

According to question,

4 Women × 120 = (12 Men + 16 Women) × d

4 Women × 120 = (16 Women + 16 Women) × d

$4 \times 120 = 32 \times d$

$d = 15$ days

53. (4) Volume of hemisphere $= \frac{2}{3}\pi r^3$

$= \frac{2}{3} \times \frac{22}{7} \times \left(\frac{21}{2}\right)^3$

$= 2425.5 \text{ cm}^3$

54. (4) Marked price of the article = ₹ x

According to question,

$$x \times \frac{80}{100} \times \frac{88}{100} = 16896$$

$$x = \frac{16896 \times 10000}{80 \times 88}$$

$x =$ ₹ 24,000

55. (3) The ratio of speed of three racers = 3 : 4 : 6

The ratio of time taken by the three racers $= \frac{1}{3} : \frac{1}{4} : \frac{1}{6}$

$= 4 : 3 : 2$

56. (3) Total runs scored by 6 players

= 121 + 40 + 26 + 56 + 37 + 48

= 328

Total runs scored by 7 players

= 7 × 53 = 371

Total runs scored by 7th player

= 371 – 328 = 43

57. (1) Total cosot price of the bicycle

= 2700 + 500

= ₹ 3,200

Selling price of the bicycle

= ₹ 3,520/-

Profit percentage

$= \frac{3520 - 3200}{3200} \times 100$

$= 10\%$

58. (2) Required decrease in consumption of onion

$= \frac{36 - 24}{36} \times 100 = 33.33\%$

59. (3) Speed of the car = x km/h

The speed of the train $= x \times \frac{120}{100}$

$= \frac{6x}{5}$ km/h

According to question,

$$t = \frac{180}{x}$$

or, $$t - \frac{30}{60} = \frac{180 \times 5}{6x}$$

or, $$\frac{180}{x} - \frac{180 \times 5}{6x} = \frac{1}{2}$$

or, $$\frac{180}{6x} = \frac{1}{2}$$

$\therefore$ $x = 60$ km/h

Speed of train $= 60 \times \frac{6}{5}$

$= 72$ km/h

60. (2) Rate = $r\%$

According to question,

$$\frac{720 \times r \times 3}{100 \times 2} = 882 - 720$$

$$\frac{54r}{5} = 162$$

$\Rightarrow$ $r = 15\%$

$$\frac{800 \times 15 \times t}{100} = 1040 - 800$$

$120t = 240$

$t = 2$ years

61. (2) $\left(\frac{x}{y}\right)^{a-4} = \left(\frac{y}{x}\right)^{2a-5}$

or, $\left(\frac{x}{y}\right)^{a-4} = \left(\frac{x}{y}\right)^{5-2a}$

or, $a - 4 = 5 - 2a$

or, $3a = a$

$\therefore$ $a = 3$

Relation between x and y cannot be found.

62. (1) $x + \frac{1}{x} = 3$

or, $x^2 + \frac{1}{x^2} + 2 = 9$

or, $x^2 + \frac{1}{x^2} = 7$

$x^4 + 1 = 7x^2$

$$\frac{x^4 + 5x^3 + 3x^2 + 5x + 1}{x^4 + 1}$$

$$= \frac{x^4 + 5x^3 + 3x^2 + 5x + 1}{7x^2}$$

$$= \frac{1}{7}\left[x^2 + 5x + 3 + \frac{5}{x} + \frac{1}{x^2}\right]$$

$$= \frac{1}{2}\left[x^2 + \frac{1}{x^2} + 5\left(x + \frac{1}{x}\right) + 3\right]$$

$$= \frac{1}{7}[7 + 5 \times 3 + 3]$$

$$= \frac{1}{7}[7 + 15 + 3] = \frac{25}{7}$$

63. (4) $3a - \frac{3}{a} - 3 = 0$

or, $a - \frac{1}{a} - 1 = 0$

or, $a - \frac{1}{a} = 1$

or, $a^3 - \frac{1}{a^3} - 3\left(a - \frac{1}{a}\right) = 1$

or, $a^3 - \frac{1}{a^3} - 3 = 1$

or, $a^3 - \frac{1}{a^3} = 4$

$\Rightarrow$ $a^3 - \frac{1}{a^3} + 2 = 4 + 2$

$\therefore$ $a^3 - \frac{1}{a^3} + 2 = 6$

64. (3) $\frac{x + \sqrt{x^2 - 1}}{x - \sqrt{x^2 - 1}} + \frac{x - \sqrt{x^2 - 1}}{x + \sqrt{x^2 - 1}}$

= 194

or, $\frac{(x + \sqrt{x^2 - 1})^2 + (x - \sqrt{x^2 - 1})^2}{x^2 - (\sqrt{x^2 - 1})^2}$

= 194

or, $\frac{x^2 + x^2 - 1 + 2x\sqrt{x^2 - 1} + x^2 + x^2 - 1 - 2x\sqrt{x^2 - 1}}{x^2 - x^2 + 1}$

= 194

or, $4x^2 - 2 = 194$

$\therefore$ $4x^2 = 196$

$\Rightarrow$ $x^2 = 49$

$\Rightarrow$ $x = 7$

65. (3) $AD = \frac{BC}{2}$

$\therefore$ $AD = BD = DC$

In ΔADC,

$\angle ACD = 40°$

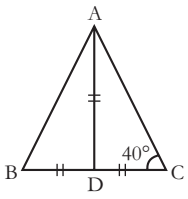
$\angle DAC = \angle ACD$ {$AD = DC$}

$\therefore$ $\angle DAC = 40°$

$\angle ADB = \angle DAC + \angle ACD$

$= 40° + 40°$

$\angle ADB = 80°$



In ΔABD,

$\because$ $AD = BD$

$\because$ $\angle BAD = \angle ABD$

$\angle DAB = \frac{180° - 80°}{2} = \frac{100}{2}$

$\angle DAB = 50°$

66. (2) $\angle BAC = 75°$

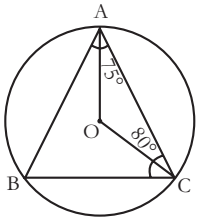
$\angle BCA = 80°$

$\angle ABC = 180° - 75° - 80°$

$\angle ABC = 25°$

$\angle AOC = 2 \times \angle ABC = 2 \times 25$

$\angle AOC = 50°$



$\because$ $AO = OC =$ radius

$\therefore$ $\angle OAC = \angle OCA$

$\angle AOC + \angle OAC + \angle OCA = 180°$

$50° + \angle OAC + \angle OAC = 180°$

$2\angle OAC = 130°$

$\angle OAC = 65°$

67. (4) $a = 4$ cm, $d_1 = 4$ cm

$$a = \frac{1}{2}\sqrt{d_1^2 + d_2^2}$$

$$4 = \frac{1}{2}\sqrt{(4)^2 + d_2^2}$$

$$8 = \sqrt{16 + d_2^2}$$

$$64 = 16 + d_2^2$$

$$d_2^2 = 48$$

$$d_2 = 4\sqrt{3}$$

Area of equilateral triangle

$$= \frac{\sqrt{3}}{4} \times (4\sqrt{3})^2$$

$$= 12\sqrt{3} \text{ cm}^2$$

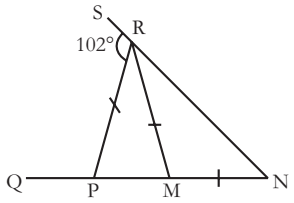
68. (2) $\angle MNR = x$

$\because$ $MN = MR$

$\therefore$ $\angle MRN = \angle MNR = x$

$\angle PMR = \angle MRN + \angle MNR$

$\angle PMR = x + x = 2x$



In ΔPMR,

$\because$ $MR = PR$

$\therefore$ $\angle RPM = \angle PMR = 2x$

$\angle PRM = 180 - 102 - x$

$\angle PRM = 78 - x$

$\angle PRM + \angle RPM + \angle PMR = 180$

$78 - x + 2x + 2x = 180$

$3x = 102$

$x = 34$

$\angle MPR = 2x = 2 \times 34$

$\angle MPR = 68°$

69. (1) $(\cos A + \sin A)(\cot A + \tan A)$

$$= (\cos A + \sin A)\left[\frac{\cos A}{\sin A} + \frac{\sin A}{\cos A}\right]$$

$$= (\cos A + \sin A)\left[\frac{\cos^2 A + \sin^2 A}{\sin A \cos A}\right]$$

$$= \frac{\cos A + \sin A}{\sin A \cos A} = \frac{1}{\sin A} + \frac{1}{\cos A}$$

$$= \text{cosec } A + \sec A$$

70. (1) $\sqrt{\frac{\text{cosec } A}{\text{cosec } A - 1} + \frac{\text{cosec } A}{\text{cosec } A + 1}}$

$$= \sqrt{\frac{\text{cosec}^2 A + \text{cosec } A + \text{cosec}^2 A - \text{cosec } A}{\text{cosec}^2 A - 1}}$$

$$= \sqrt{\frac{2\,\text{cosec}^2 A}{\cot^2 A}} = \sqrt{2} \times \frac{\text{cosec } A}{\cot A}$$

$$= \sqrt{2} \times \frac{1}{\sin A} \times \frac{\sin A}{\cos A}$$

$$= \sqrt{2} \times \frac{1}{\cos A} = \sqrt{2} \sec A$$

71. (1) $2\cos\theta = 2 - \sin\theta$

$\sin\theta = 2 - 2\cos\theta$

$\sin^2\theta = 4 + 4\cos^2\theta - 8\cos\theta$

$1 - \cos^2\theta = 4 + 4\cos^2\theta - 8\cos\theta$

$5\cos^2\theta = 8\cos\theta + 3 = 0$

$5\cos^2\theta - 5\cos\theta - 3\cos\theta + 3 = 0$

$5\cos\theta[\cos\theta - 1] - 3[\cos\theta - 1] = 0$

$(\cos\theta - 1)(5\cos\theta - 3) = 0$

$\cos\theta = 1, \frac{3}{5}$

72. (1) Required difference

$$= 1183 \times \frac{[4 - 3]}{7}$$

$$= 169$$

73. (4) Import in year $4 = 315 \times \frac{8}{5}$

$= 504$

Total trade in year $4 = 315 + 504$

$= 819$

Import in year $2 = 819 \times \frac{7}{(11 + 7)}$

$= 318.5$

74. (2) Total trade of year 1 = 5700

Total trade of year $5 = \frac{5700}{2}$

$= 2850$

Export of year $1 = 5700 \times \frac{10}{19}$

$= 3000$

Export of year $5 = 2850 \times \frac{12}{25}$

$= 1368$

$\therefore$ Required difference $= 3000 - 1368 = 1632$

75. (1) Import of year $1 = 3800 \times \frac{9}{19}$

$= 1800$

Export of year $1 = 3800 \times \frac{10}{19}$

$= 2000$

Import of year $2 = 3600 \times \frac{7}{18}$

$= 1400$

Export of year $2 = 3600 \times \frac{11}{18}$

$= 2200$

Import of year $3 = 2800 \times \frac{3}{7}$

$= 1200$

Export of year $3 = 2800 \times \frac{4}{7}$

$= 1600$

Import of year $4 = 3900 \times \frac{8}{13}$

$= 2400$

Export of year $4 = 3900 \times \frac{5}{13}$

$= 1500$

Import of year $5 = 5000 \times \frac{13}{25}$

$= 2600$

Export of year 5 = $5000 \times \frac{12}{25}$ = 2400

Average import

$= \frac{1800 + 1400 + 1200 + 2400 + 2600}{5}$

$= \frac{9400}{5} = 1880$

Average export

$= \frac{2000 + 2200 + 1600 + 1500 + 2400}{5}$

$= \frac{9700}{5} = 1940$

∴ Required difference = 1940 – 1880 = 60

PART-IV (ENGLISH LANGUAGE)

76. (3) In the given sentence, part (3) has an error. To correct the sentence use 'to' in place of 'than'.

77. (2) In the given sentence, part (2) has an error. To correct the sentence use 'to' in place of 'than'.

78. (1) **Immanent (Adjective):** (of God) pervasive; pervading omnipresent.

79. (2) **Pass (Verb):** (of a candidate) be successful in an examination, a test, etc.

80. (2) **Articulate/Distinct (Adjective):** lucid; coherent

Sentence → Reema is not very articulate.

81. (2) **Ascend/Climb (Verb):** go up; rise up.

Sentence → Mita ascended the stairs.

82. (4) Opposite of Waggish is

Solemn (Adjective): serious; earnest.

Sentence → Her solemn face told them that the news was bad.

83. (1) Opposite of Desecrate is

Sanctify (Verb): consecrate; make holy

Sentence → A small shrine was built to sanctify the site.

84. (1) Something that is impossible to get or achieve.

Sentence → Providing employment to every Tom, Dick and Harry is will-o'-the-wisp'.

85. (2) **To experience many dangers in order to achieve**

Sentence → Alif had to go through fire and water in order to get back his wife.

86. (4) **Agree on** → some issue or point of debate.

No improvement is required.

87. (3) For improvement of sentence use 'either writes' in place of 'either write'.

88. (3) Best substitute of the sentence is

Gust (Noun): a sudden strong wind.

Sentence → A gust of wind drove down the Valley.

89. (2) Best substitute of the sentence is

Cynophobia (Noun): an irrational fear of dogs.

Sentence → A person who has cynophobia experiences a fear of dogs that's both irrational and persistent.

90. (1) Correctly spelt word → bulletin

91. (3) Correctly spelt word → handkerchief

92. (1) Logical order of the sentences to form a coherent paragraph → PRQS

93. (2) Logical order of the sentences to form a coherent paragraph → RSPQ

94. (1) Passive/Active Voice →

The police arrested John on a charge of murder, but for a lack of evidence released him.

95. (1) Indirect/ Direct Speech →

He said that he had seen a snake there.

96. (4) Best option for blank → Identified

Identify with Something (Phrasal Verb): to think of something as being the same as something else.

Sentence → Truthfulness is identified with nobility.

97. (4) Best option for blank →

Notion (Noun): idea; belief

98. (2) Best option for blank →

Wrong (Adjective): incorrect; mistaken.

99. (1) Best option for blank →

Merely (Adverb): only; purely.

100. (4) Best option for blank →

Immoral (Adjective): bad; evil; not moral

❑❑❑

16

SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 09 August, 2017 (III)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Ammeter : Current : : ? : ?
(1) Scale : Speed
(2) Seismograph : Density
(3) Barometer : Mass
(4) Anemometer : Wind

2. JPC : GMZ : : PUV : ?
(1) MRS (2) MSR
(3) MQR (4) RMS

3. 5 : 130 : : 6 : ?
(1) 210 (2) 212
(3) 222 (4) 226

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Quick : Fast
(2) Lazy : Slow
(3) Credible : Deceptive
(4) Exhaust : Tired

5. (1) CD (2) PR
(3) ST (4) WX

6. (1) 234 (2) 345
(3) 243 (4) 432

7. Arrange the given words in the sequence in which they occur in the dictionary.
1. Globe 2. Group
3. Glitch 4. Gap
5. Glade
(1) 42351 (2) 45321
(3) 43125 (4) 45312

Directions (8–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

8. CEG, IKM, OQS, ?
(1) UWY (2) UYX
(3) UVY (4) TWY

9. 7, 19, 42, 87, ?
(1) 136 (2) 176
(3) 172 (4) 216

10. Present age of A is 2 times the present age of B. After 8 years the B's age will be 4 times of C's present age. If C celebrated his fifth birthday 9 years ago, then what is the present age (in years) of A?
(1) 88 years (2) 96 years
(3) 92 years (4) 84 years

11. Pearl Towers is taller than Sky Towers but shorter than Unity Towers. Unity Towers and Cyber Towers are of same height. Pearl Towers is shorter than Indus Towers. Amongst the buildings, who is the second shortest?
(1) Pearl Tower (2) Sky Tower
(3) Indus Tower (4) Unity Tower

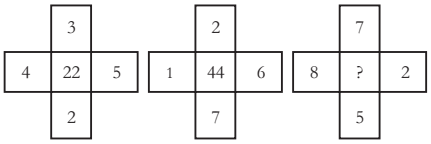
12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
Legislator
(1) Raise (2) Gist
(3) Legal (4) Greater

13. In a certain code language, "MATCH" is written as "NYWYM" and "BOARD" is written as "CMDNI". How is "PRINT" written in that code Language?
(1) YJLPQ (2) ZIMOR
(3) ROMIZ (4) QPLJY

14. If "+" denotes "divided by", "×" denotes "added to", "÷" denotes "subtracted from" and "–" denotes "multiplied by", then
$54 + 162 - 18 \times 12 \div 6 = ?$
(1) 4 (2) 16
(3) 12 (4) 10

15. If $(3)^2$ @ 1 * 7 = 98 and $(4)^2$ @ 2 * 16 = 178, then $(5)^2$ @ 3 * 9 = ?
(1) 218 (2) 262
(3) 253 (4) 259

16. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.



(1) 54 (2) 60
(3) 62 (4) 66

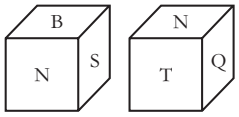
17. How many triangles are there in the given figure?

(1) 14 (2) 15
(3) 16 (4) 19

18. In each of the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements?

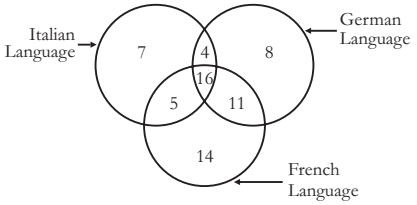
Statements:
All cups are plate.
No plate is a shop.
Conclusions:
I. No cup is a shop.
II. No shop is a plate.
(1) Only Conclusion I follows
(2) Only conclusion II follows
(3) Both Conclusions follow
(4) Neither conclusion I nor II follows

19. Three positions of a cube are shown below. What will come opposite to face containing 'B'?



(1) Q (2) T
(3) S (4) Q or T

20. In the given figure, how many people speak Italian and French language?

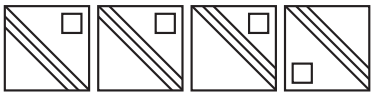


(1) 21 (2) 16
(3) 27 (4) 20

21. Which answer figure will complete the pattern in the question figure?

Question Figure

Answer Figures

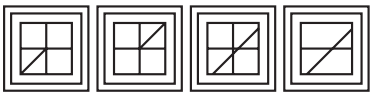


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

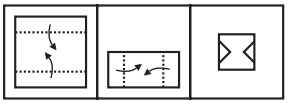
Answer Figures



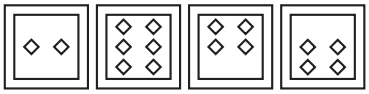
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figures



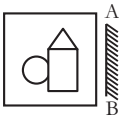
Answer Figures



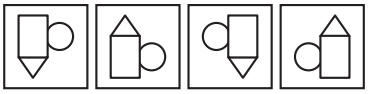
(1) (2) (3) (4)

24. If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'Q' can be represented by 10, 34 etc. and 'B' can be represented by 86, 79 etc. Similarly, you have to identify the set for the word "STAR".

Matrix-I

	0	1	2	3	4
0	P	R	T	Q	S
1	Q	S	P	R	T
2	R	T	Q	S	P
3	S	P	R	T	Q
4	T	Q	S	P	R

Matrix-II

	5	6	7	8	9
5	B	K	D	A	J
6	A	J	B	K	D
7	K	D	A	J	B
8	J	B	K	D	A
9	D	A	J	B	K

(1) 42, 03, 89, 13
(2) 11, 40, 65, 02
(3) 04, 32, 96, 32
(4) 30, 21, 77, 44

PART-II
(GENERAL AWARENESS)

26. When there is only one buyer and one seller of product, it is called ..... situation.
(1) public monopoly
(2) bilateral monopoly
(3) franchised monopoly
(4) monopsony

27. Which among the following sponsors Regional Rural Banks (RRB's)?
(1) Reserve Bank of India
(2) Foreign Banks
(3) National Commercial Banks
(4) Co-operative Banks

28. Which of the following has the supreme command of the Indian Defence Forces?
(1) Prime Minister of India
(2) Defence Minister of India
(3) Council of Ministers of India
(4) President of India

29. Anti-defection law is given in which schedule of Indian Constitution?
(1) Second Schedule
(2) Tenth Schedule
(3) Third Schedule
(4) Fourth Schedule

30. Who was the founder of Banaras Hindu University?
(1) Sukumar Dutt
(2) Madan Mohan Malviya
(3) Dr. Rajendra Prasad
(4) Motilal Nehru

31. The second Battle of Tarain was fought between ..... .
(1) Alexander and Porus
(2) Jai Chand and Mohammed Ghori
(3) Akbar and Hemu
(4) Mohammed Ghori and Prithviraj Chauhan

32. Which of the following is the most abundant metal on Earth's crust?
(1) Magnesium (2) Iron
(3) Copper (4) Aluminium

33. Soil having high content of aluminum and iron oxide is also known as ..... .
(1) Meadow Soil
(2) Pedalfer Soil
(3) Chernozen Soil
(4) Podzols Soil

34. Red rot is a disease caused to which of the following plant?
(1) Paddy (2) Sugarcane
(3) Mustard (4) Wheat

35. Which among the following is not a connective tissue?
(1) Blood (2) Bone
(3) Skin (4) Cartilage

36. Which of the following micro-organism causes diseases like polio and Chicken pox?
(1) Bacteria (2) Protozoa
(3) Algae (4) Virus

37. Convex mirror is generally used in ..... .
(1) Solar cookers
(2) Opthalmoscope
(3) Reflector for head light
(4) Rear view mirror

38. What is the S.I. unit of frequency?
(1) Newton (2) Watt
(3) Farad (4) Hertz

39. Which among the following is a 'Modifier key'?
(1) Control
(2) Shift
(3) Alt
(4) All options are correct

40. Which of the following is an Inert Gas?
(1) Hydrogen (2) Nitrogen
(3) Oxygen (4) Argon

41. Ozone is an ..... of oxygen.
(1) Allotrope (2) Isotope
(3) Isobar (4) Isotone

42. Red data book contains data of which of the following?
(1) All plant species
(2) All animal species
(3) All endangered species
(4) All extinct species

43. Union Cabinet approves amendments in M-SIPS to attract investment in electronics manufacturing. What is the full form of M-SIPS?
(1) Modified Sustainable Investment Package Scheme
(2) Modified Special Information Package Scheme
(3) Modified Special Incentive Package Scheme
(4) Modern Socialist Incentive Package Scheme

44. Who was the inventor of frozen books?
(1) Alfred Nobel
(2) Clarence Birdseye
(3) Frank Whittle
(4) Ives McGaffey

45. Match the following:

Term		Sport
1.	Birdie	a. Tennis
2.	Volley	b. Cricket
3.	Hit wicket	c. Golf

(1) 1-b, 2-c, 3-a
(2) 1-c, 2-a, 3-b
(3) 1-a, 2-c, 3-b
(4) 1-c, 2-b, 3-a

46. The Mosque with "shaking minarets" is situated in which Indian City?
(1) Kanpur (2) Ahmedabad
(3) Jaipur (4) Ranchi

47. Who among the following was awarded with Padma Shri 2017 in the field of 'Culinary'?
(1) Sanjeev Kapoor
(2) Vikas Khanna
(3) Ranveer Brar
(4) Kunal Kapur

48. 'The World Outside My Window' is written by which author?
(1) Emily Bronte
(2) Ruskin Bond
(3) I. Jan Austen
(4) Henry Fielding

49. Due to increased weapon launching missions of North Korea, which country has launched a spy satellite to monitor it?
(1) South Korea (2) USA
(3) China (4) Japan

50. With which of the following country, India has a land dispute near Tawang?
(1) Pakistan (2) China
(3) Afghanistan (4) Bangladesh

PART-III
(QUANTITATIVE APTITUDE)

51. How many times the keys of a typewriter have to be pressed in order to write numbers from 121 to 1346?
(1) 3675 (2) 4018
(3) 4021 (4) 4025

52. Sandy and Mandy do $\left(\frac{8}{13}\right)$th part of a work and the rest of the work was completed by Andy. If Sandy, Mandy and Andy take the same work for ₹ 2,600/-, then what is the share (in ₹) of Andy?
(1) ₹ 1,600/- (2) ₹ 1,400/-
(3) ₹ 800/- (4) ₹ 1,000/-

53. A solid cone of height 24 cm and radius of its base 8 cm is melted to form a solid cylinder of radius 6 cm

and height 6 cm. In the whole process what percent of material is wasted?
(1) 48.5% (2) 37.5%
(3) 57.8% (4) 64%

54. If two successive discounts of 20% and 30% are given, then what is the net discount (in percentage)?
(1) 40% (2) 44%
(3) 56% (4) 60%

55. In what ratio sugar at ₹ 30 per kg should be mixed with sugar at ₹ 45 per kg so that on selling the mixture at ₹ 42 per kg there is a profit of 20%?
(1) 2 : 1 (2) 2 : 3
(3) 5 : 2 (4) 3 : 7

56. Average of 11 numbers is 7. If every number is doubled, then what will be the new average of the numbers?
(1) 3.5 (2) 7
(3) 10.5 (4) 14

57. A trader sold an article at profit of 20%. Had he bought that article at 60% less price and sold it at ₹ 90/- less, then he would have gained 50%. What is the value (in ₹) of cost price?
(1) ₹ 150/- (2) ₹ 200/-
(3) ₹ 250/- (4) ₹ 300/-

58. Amit donated 20% of his income to a school and deposited 20% of the remainder in his bank. If he is having ₹ 12,800/- now, then what is the income (in ₹) of Amit?
(1) ₹ 18,000/- (2) ₹ 20,000/-
(3) ₹ 24,000/- (4) ₹ 32,000/-

59. Two trains are moving in the opposite directions at speed of 43 km/h and 51 km/h respectively. The time taken by the slower train to cross a man sitting in the faster train is 9 seconds. What is the length (in m) of the slower train?
(1) 235 m (2) 338.4 m
(3) 470 m (4) 940 m

60. A certain sum of money amounts to ₹ 918/- in 2 years and ₹ 969/- in 3.5 years at simple interest. What is the rate of interest (in percentage)?
(1) 4% (2) 5%
(3) 6% (4) 8%

61. If $4^{(x+y)} = 256$ and $(256)^{(x-y)} = 4$, then what is the value of x and y?
(1) $\frac{17}{8}, \frac{15}{8}$ (2) $\frac{17}{4}, \frac{15}{4}$
(3) $\frac{9}{17}, \frac{15}{17}$ (4) $\frac{8}{17}, \frac{8}{15}$

62. If the expression $px^3 - qx^2 - 7x - 6$ is completely divisible by $x^2 - x - 6$, then what is the value of p and q respectively?
(1) 0, 1 (2) 1, 0
(3) 2, 1 (4) 1, 2

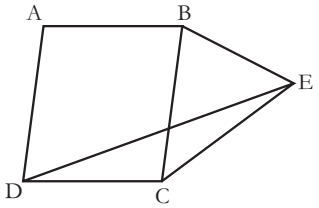
63. If the expression $px^3 - 2x^2 - qx + 18$ is completely divisible by $(x^2 - 9)$, then what is the ratio between p and q respectively?
(1) 1 : 9 (2) 1 : 3
(3) 3 : 1 (4) 9 : 1

64. If $x + \frac{1}{x} = 5$, then what is the value of $x^5 + \frac{1}{x^5}$?
(1) 1875 (2) 2525
(3) 2530 (4) 3120

65. In ΔABC, ∠ABC = 90°. BP is drawn perpendicular to AC. If ∠BAP = 90°, then what is the value (in degrees) of ∠PBC?
(1) 30° (2) 45°
(3) 50° (4) 60°

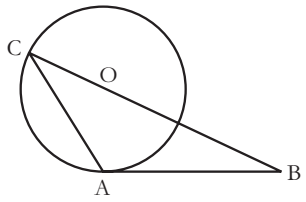
66. In ΔPQR, the sides PQ and PR are produced to A and B respectively. The bisectors of ∠AQR and ∠BRQ intersect at point O. If ∠QOR = 50°, then what is the value (in degrees) of ∠QPR?
(1) 50° (2) 60°
(3) 80° (4) 100°

67.



In the given figure, ABCD is a rhombus and BCE is an isosceles triangle, with BC = CE, ∠CBE = 84° and ∠ADC = 78°, then what is the value (in degrees) of ∠DEC?
(1) 20° (2) 28°
(3) 33° (4) 36°

68.



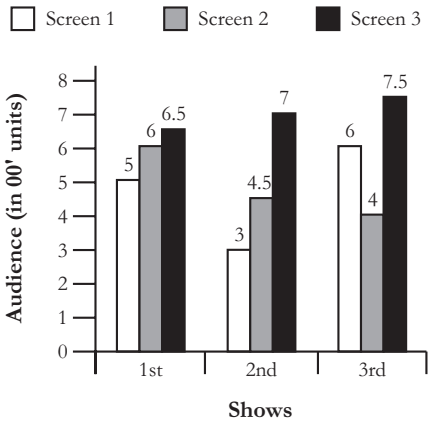
In the given figure, ΔABC is drawn such that AB is tangent to a circle at A whose radius is 10 cm and BC passes through centre of the circle. Point C lies on the circle. If BC = 36 cm and AB = 24 cm, then what is the area (in cm^2) of ΔABC?
(1) 134.5 cm^2 (2) 148 cm^2
(3) 166.15 cm^2 (4) 180 cm^2

69. What is the simplified value of $\left(\frac{2}{\cot\frac{A}{2} + \tan\frac{A}{2}}\right)$?
(1) sin A (2) $\cos\frac{A}{2}$
(3) $\cos^2 A$ (4) $2\sin\frac{A}{2}$

70. What is the simplified value of $\left(\frac{1}{\sec A + \tan A}\right)^2$?
(1) sec A + tan A
(2) sin A cos A
(3) $\frac{(1 - \sin A)}{(1 + \sin A)}$
(4) $\frac{(1 - \cos A)}{(1 + \cos A)}$

71. What is the simplified value of $(\text{cosec}^4 A - \cot^2 A) - (\cot^4 A + \text{cosec}^2 A)$?
(1) 0 (2) 5
(3) 6 (4) 9

Directions (72–75): The bar chart given below shows the number of audience in a multiscreen theatre for 3 shows.



72. What is the percentage increase in the number of audience in Screen 1 from second show to third show?
(1) 50% (2) 100%
(3) 120% (4) 150%

73. For the second show the number of audience in Screen 3 is how much more than the number of audience in Screen 1?
(1) 500 (2) 350
(3) 400 (4) 450

74. What is the percentage increase in the total number of audience from second show to third show?
(1) 20.69% (2) 25.13%
(3) 22.24% (4) 18.15%

75. If the tickets for Screen 1, Screen 2 and Screen 3 are ₹ 350/-, ₹ 300/- and ₹ 250/- respectively, then which screen has the maximum total revenue for three shows?
(1) Screen 1
(2) Screen 1 and Screen 3
(3) Screen 2
(4) Screen 3

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. My brother finds it difficult (1)/ to pass away the time (2)/ at our grandparent's house. (3)/ No error (4)

77. No sooner had he finished (1)/ his morning walk (2)/ when it began to rain. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. ..... you work hard, you cannot succeed.
(1) If (2) Till
(3) Until (4) Unless

79. Corruption is a standing hindrance ..... the nation's development.
(1) of (2) over
(3) to (4) upon

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Lethargy
(1) Activity (2) Drowsy
(3) Modes (4) Pleasure

81. Hoodwink
(1) Defraud (2) Illicit
(3) Secret (4) Stare

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Multifaceted
(1) Adroit (2) Handy
(3) Pliable (4) Simple

83. Trepidation
(1) Bold (2) Calm
(3) Fear (4) Violent

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. Kick the bucket
(1) Loose temper
(2) To delay a little longer
(3) To die
(4) To meet with an accident

85. An axe to grind
(1) To act bravely
(2) To act like a fool
(3) To have a selfish motive
(4) To take risk

Directions (86–87): Improve the **bold** part of the sentence.

86. We **are looking forward for** a positive response from you.
(1) are looking forward to
(2) have been looking forward at
(3) should look forward at
(4) No improvement

87. He **promised to mend** his ways.
(1) had a promised to mending
(2) promised for mending
(3) was promised of mending
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

88. One who is determined to take full revenge for wrongs done to him
(1) Enmity (2) Nigger
(3) Pedantic (4) Vindictive

89. Just punishment for wrong doing
(1) Dandy (2) Nemesis
(3) Prodigy (4) Wagon

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Continuous (2) Glamoros
(3) Meticulous (4) Vicious

91. (1) Secondary (2) Sizable
(3) Succumb (4) Sustenance

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. P. To those who have known comfort, discomfort is a real torture.
Q. Comfort is now one of the causes of its own spread.
R. The more comfort is brought into the world, the more it is likely to be valued.

S. It has now become a physical habit, a fashion, an ideal to be pursued for its own sake.

(1) QRSP (2) QPRS
(3) QPSR (4) QSRP

93. P. In that frame of mind, we have little sense of identity, safety or security.

Q. Courage is required to explore our secret life because we must first withdraw from the social mirror, where we are fed positive and negative feedback continuously.

R. As we get used to this social feedback, it becomes a comfort zone.

S. And we may opt to avoid self examination and idle away our time in a vacuum of reverie and rationalization.

(1) QSRP (2) QRSP
(3) SQRP (4) SRQP

94. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

The kids were laughing at the old lady.

(1) The old lady is laughing at the kids.
(2) The old lady was being laughed at by the kids.
(3) The old lady was being laughed by the kids.
(4) The old lady was laughed at by the kids.

95. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

"Do you want some more chocolates?" asked my cousin.

(1) My cousin asked me if I want some more chocolates.
(2) My cousin said to me if I wanted some more chocolates.
(3) My cousin asked me that I wanted some more chocolates.
(4) My cousin asked me whether I wanted some more chocolates.

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

An independent, able and upright judiciary is the hallmark of a free ...**96**... country therefore, the process of judicial appointment is of ...**97**... importance. At present on account of the Supreme Court's last advisory opinion, the ...**98**... of the executive and its interference in the appointment of judges is ...**99**... which in light of previous is most ...**100**... .

96. (1) Autocratic
(2) Democratic
(3) Liberal
(4) Participative

97. (1) Mere
(2) Mourn
(3) Social
(4) Vital

98. (1) Career
(2) Future
(3) Role
(4) Plight

99. (1) Maximum (2) Minimal
(3) Negotiable (4) Reasonable

100. (1) Adhered (2) Neglected
(3) Rejected (4) Welcomed

Short Answers

1. (4)	**2.** (1)	**3.** (3)	**4.** (3)	**5.** (2)	**6.** (2)	**7.** (4)	**8.** (1)	**9.** (2)	**10.** (2)
11. (1)	**12.** (4)	**13.** (4)	**14.** (3)	**15.** (2)	**16.** (4)	**17.** (2)	**18.** (3)	**19.** (1)	**20.** (1)
21. (3)	**22.** (3)	**23.** (2)	**24.** (2)	**25.** (4)	**26.** (2)	**27.** (3)	**28.** (4)	**29.** (2)	**30.** (2)
31. (4)	**32.** (4)	**33.** (2)	**34.** (2)	**35.** (3)	**36.** (4)	**37.** (4)	**38.** (4)	**39.** (4)	**40.** (4)
41. (1)	**42.** (3)	**43.** (3)	**44.** (2)	**45.** (2)	**46.** (2)	**47.** (1)	**48.** (2)	**49.** (4)	**50.** (2)
51. (4)	**52.** (4)	**53.** (3)	**54.** (2)	**55.** (1)	**56.** (4)	**57.** (1)	**58.** (2)	**59.** (1)	**60.** (1)
61. (1)	**62.** (2)	**63.** (1)	**64.** (2)	**65.** (3)	**66.** (3)	**67.** (3)	**68.** (3)	**69.** (1)	**70.** (3)
71. (1)	**72.** (2)	**73.** (3)	**74.** (1)	**75.** (4)	**76.** (2)	**77.** (3)	**78.** (4)	**79.** (3)	**80.** (2)
81. (1)	**82.** (4)	**83.** (2)	**84.** (3)	**85.** (3)	**86.** (1)	**87.** (4)	**88.** (4)	**89.** (2)	**90.** (2)
91. (4)	**92.** (4)	**93.** (1)	**94.** (2)	**95.** (4)	**96.** (2)	**97.** (4)	**98.** (3)	**99.** (2)	**100.** (4)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (4) Ammeter is an instrument to measure the strength of an electric current. Similarly, Anemometer is an instrument to measure the velocity and direction of wind.

2. (2) J P C : G M Z :: P U V : **M R S**

–3, –3, –3 | –3, –3, –3

3. (3) 5 : 130 :: 6 : **222**

$\times(5^2+1)$ $\times(6^2+1)$

4. (3) **Except Credible :** Deceptive pair, in all other pairs both the words are synonymous to each other.

5. (2) C D P R

+1 +2

S T W X

+1 +1

6. (2) 234 = 2 + 3 + 4 = 9

345 = 3 + 4 + 5 = 12

243 = 2 + 4 + 3 = 9

432 = 4 + 3 + 2 = 9

7. (4) Arrangement of the given words as per English dictionary is as follows:

Gap (4) → Glade (5) → Glitch (3) → Globe (1) → Group (2).

8. (1) C E G I K M O Q S **U W Y**

+6 +6 +6

9. (1) 7 19 42 87 **176**

×2+5 ×2+4 ×2+3 ×2+2

10. (2) C's present age = 14 years

B's present age = 14 × 4 – 8

= 56 – 8

= 48 years

A's present age = 48 × 2

= 96 years

11. (1) Unity > Pearl > Sky

Unity > Cyber

Indus > Pearl

Indus > Unity = Cyber > Pearl > Sky

Unity = Cyber > Indus > Pearl > Sky

∴ Pearl tower is the second shortest.

12. (4) The word 'Greater' cannot be formed using the letters of the given word because the word 'Legislator' does not have two 'e'.

13. (4) As, M A T C H , B O A R D

+1 –2 +3 –4 +5 +1 –2 +3 –4 +5

N Y W Y M C M D N I

Similarly,

P R I N T

+1 –2 +3 –4 +5

Q P L J Y

14. (3)

+ ⇒ ÷	× ⇒ +
÷ ⇒ –	– ⇒ ×

? = 54 + 162 – 18 × 12 ÷ 6

? = 54 ÷ 162 × 18 + 12 – 6

$? = \frac{54}{162} \times 18 + 6$

? = 6 + 6 = 12

15. (2) As, $(3)^2$ @ 1 * 7 = $(3)^2$ @ 1 + 7 = 9 @ 8 = 98

$(4)^2$ @ 2 * 16 = $(4)^2$ @ 2 + 16 = 16 @ 18 = 16 + 1 @ 8 = 178

Similarly,

$(5)^2$ @ 3 * 9 = $(5)^2$ @ 3 + 9 = 25 @ 12 = 25 + 1 @ 2 = 26 @ 2 = **262**

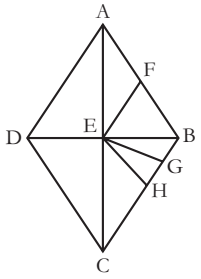
16. (4) As, 4 × 3 + 2 × 5 = 22

1 × 2 + 7 × 6 = 2 + 42 = 44

Similarly,

8 × 7 + 5 × 2 = 56 = 10 = **66**

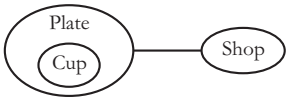
17. (2)



Triangles = AED; AEF; AEB; FEB; EGB; EHB; EHG; CED; CEB; CEG; CEH; DAC; BCA; ADB; CBD.

∴ Number of triangles = 15

18. (3)



19. (1) From the rotation of two cubes, it is clear that Q lies opposite B.

20. (1) The number of people speak Italian and French languages

= 16 + 5 = 21

21. (3)

22. (3)

23. (2)

24. (2)

25. (4) S → **30**, 11, 42, 23, 04

T → 40, **21**, 02, 33, 14

A → 65, 96, **77**, 58, 89

R → 20, 01, 32, 13, **44**

For given word STAR, group of letters can be represented by the numbers → 30, 21, 77, 44.

PART-II
(GENERAL AWARENESS)

26. (2) **Bilateral Monopoly:** It is a market structure consisting of both a monopoly (a single seller) and a monopsony (a single buyer).

27. (3) **Regional Rural Banks (RRBs)** are sponsored by five commercial banks, Punjab National Bank, State Bank of India, Syndicate Bank, United Bank of India and UCO Bank. Owned by the Central Government, the State Government and the Sponsor Bank who

hold shares in the ratios of 50%, 15% and 35% respectively.

28. (4) The President is the Supreme Commander of the Indian Armed Forces. He can declare war or conclude peace, on the advice of the Union Council of Ministers headed by the Prime Minister.

29. (2) **Anti-Defection Law** is contained in the Tenth Schedule of the Constitution, which was introduced by the 52nd Amendment in 1985 during the tenure of Rajiv Gandhi.

30. (2) **Banaras Hindu University (BHU):** Formerly Central Hindu College, was established by Pandit Madan Mohan Malviya in Varanasi, Uttar Pradesh, in 1916. The university's main campus was built on land donated by the Kashi Naresh, the hereditary ruler of Banaras.

31. (4) **Second Battle of Tarain:** It was fought between Mohammed Ghori and Prithviraj Chauhan near Thanesar in present-day Haryana in 1192 A.D. In this battle, Prithviraj Chauhan was defeated by Mohammed Ghori. Ghori followed up this victory by defeating Jayachandra in the Battle of Chandawar.

32. (4) Most abundant metal in the Earth's crust is Aluminium and the third most abundant element therein, after oxygen and silicon. It makes up about 8% by weight of the Earth's solid surface. Earth's crust occupies less than 1% of Earth's volume. Oxygen is 46.6%, Silicon 27.77%, Aluminium is 8.09% and Iron is 5%.

33. (2) Pedalfer soil is composed of aluminium and iron oxides. It is a subdivision of the zonal soil order comprising a large group of soils in which sesquioxides increase relative to silica during soil formation. Pedalfers usually occur in humid areas.

34. (2) **Red Rot:** It is one of the oldest known diseases of sugarcane that is caused by the fungus Colletotrichum falcatum (Glomerella tucumanensis).

35. (3) Skin is composed of a layer of epithelial tissue (epidermis) that is supported by a layer of connective tissue. It protects the internal structures of the body from damage and dehydration.

36. (4) Both polio and chicken pox are caused by virus. Poliomyelitis, often called polio or infantile paralysis, is an infectious diseasec caused by the poliovirus; while, Chicken pox, also known as varicella, is a highly contagious disease caused by the initial infection with varicella zoster virus (VZV).

37. (4) Rear view mirrors of cars are convex mirrors as they enable the driver to see a wide area of the road behind the car.

38. (4) S.I. unit of frequency is Hertz (Hz). It is named for Heinrich Rudolf Hertz, the first person to provide conclusive proof of the existence of electromagnetic waves.

39. (4) **Modifier Key:** It is a special key (or combination) on a computer keyboard that temporarily modifies the normal action of another key when pressed together. Modifier keys are Ctrl, Shift and Alt.

40. (4) Argon is an inert gas (noble gas) that is placed in Group 18 of the periodic table. It is the most abundant noble gas in Earth's crust, comprising 0.00015% of the crust. Other noble gases that occur naturally are Helium (He), Neon (Ne), Argon (Ar), Krypton (Kr), Xenon (Xe) and Radon (Rn).

41. (1) **Ozone (O_3):** It is also known as trioxygen, one molecule of ozone is made of 3 oxygen atoms. It is formed from dioxygen by the action of ultraviolet light and also atmospheric electrical discharges. It is an allotrope of oxygen.

42. (3) **Red Data Book:** It is the state document established for documenting rare and endangered species of animals, plants and fungi as well as some local sub-species that exist within the territory of the state or country.

43. (3) **M-SIPS** stands for Modified Special Incentive Package Scheme. It was launched to promote large-scale manufacturing, to offset disability and to attract domestic and global investments into the Electronic System Design and Manufacturing (ESDM) sector in India.

44. (2) **Clarence Birdseye (American Entrepreneur):** He is considered to be the founder of the modern frozen food industry. He invented the quick-freezing method in 1924, which produces the type of frozen foods that we know today. His quick-freezing process also covered packaging, type of paper used, and related innovations.

45. (2) **Birdie:** A golf score of one stroke less than par on a hole.

Volley: A shot in Tennis that is hit before the ball bounces on the ground.

Hit Wicket: A method of dismissal in the sport of cricket.

46. (2) **Sidi Bashir Mosque (Jhulta Minar or Shaking Minarets):** It is located in Ahmedabad, Gujarat. The mosque was constructed by Sidi Bashir, a slave of Sultan Ahmed Shah in the 15th century A.D.

47. (1) In culinary section, celebrity chef Sanjeev Kapoor was on 13 April 2017 honoured with the Padma Shri Award by President Pranab Mukherjee. He is the most celebrated face of Indian cuisine.

48. (2) Ruskin Bond is the author of the book "The World Outside My Window".

49. (4) In March 2017, Japan launched the IGS Radar 5 spy satellite into space in an apparent mission to enhance the monitoring of North Korea. It was launched into orbit on a Japanese H-2A rocket from the Tanegashima Space Center.

50. (2) India and China have dispute over the politically and strategically sensitive Tawang tract, south of the McMahon Line, in Arunachal Pradesh.

PART-III
(QUANTITATIVE APTITUDE)

51. (4) Number of 1 digit natural numbers (1, 2, ... 9) = 9

Required keystrokes = 9 × 1 = 9

Number of 2 digit natural numbers (10, 11, ... 99) = 90

Required keystrokes = 90 × 2 = 180

Number of 3 digit natural numbers (100, 101, ... 999) = 900

Required keystrokes = 900 × 3 = 2700

Number of 4 digit natural numbers (1000, 1001, ... 1346) = 347

Required keystrokes = 347 × 4 = 1388

Total keystrokes from 1 to 1346

= 9 + 180 + 2700 + 1388 = 4277

Total keystrokes from 1 to 120

= 9 × 1 + 90 × 2 + 21 × 3 = 252

∴ Required keystrokes

= 4277 – 252 = 4025

52. (4) Sandy and Mandy do the work $= \frac{8}{13}$

Remaining work $= 1 - \frac{8}{13} = \frac{5}{13}$

Andy's share $= 2600 \times \frac{5}{13} = ₹\ 1{,}000$

53. (3) Volume of cone $= \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi \times (8)^2 \times 24 = 512\pi\ cm^3$

Volume of cylinder $= \pi r^2 h = \pi \times (6)^2 \times 6 = 216\pi\ cm^3$

Wasted material $= 512\pi - 216\pi$

$= 296\pi$

Required percentage $= \frac{296\pi}{512\pi} \times 100$

$= 57.8\%$

54. (2) Net discount $= 20 + 30 - \frac{20 \times 30}{100}$

$= 50 - 6 = 44\%$

55. (1) Quantity of sugar at ₹ 30 per kg $= x$

Quantity of sugar at ₹ 45 per kg $= y$

According to question,

$$(30x + 45y) \times \frac{120}{100} = 42\,(x + y)$$

$$(30x + 45y) \times 6 = 42 \times 5\,(x + y)$$

$$30x + 45y = 35x + 35y$$

$$5x = 10y$$

$$\frac{x}{y} = \frac{10}{5} = \frac{2}{1}$$

∴ Required ratio $= x : y = 2 : 1$

56. (4) Average of 11 numbers = 7

If every number is doubled,

Sum of 11 number

$= 11 \times 7 \times 2 = 154$

∴ New average of 11 numbers

$= \frac{154}{11} = 14$

57. (1) Cost price of the article = ₹ x

Selling price of the article

$= x \times \frac{120}{100} = ₹\ \frac{6x}{5}$

New cost price of the article

$= x \times \frac{40}{100} = ₹\ \frac{2x}{5}$

New selling price of the article

$= \frac{2x}{5} \times \frac{150}{100} = ₹\ \frac{3x}{5}$

According to question,

$$\frac{6x}{5} - \frac{3x}{5} = 90$$

or, $\frac{3x}{5} = 90$

∴ $x = 30 \times 5 = ₹\ 150$

58. (2) Amit's income = ₹ x

According to question,

$$x \times \frac{80}{100} \times \frac{80}{100} = 12800$$

or, $\frac{16x}{25} = 12800$

or, $x = 800 \times 25$

∴ $x = ₹\ 20{,}000$

59. (1) Length of the slower train = x metre

According to question,

$$9 = \frac{x}{(43 + 51) \times \frac{5}{18}}$$

$2x = 94 \times 5$

∴ $x = 47 \times 5 = 235$ m

60. (1) Simple interest for 1.5 years

$= 969 - 918 = 51$

Simple interest for 2 years

$= \frac{51 \times 2}{1.5} = 68$

Principal $= 918 - 68 = 850$

$$\frac{850 \times r \times 2}{100} = 68$$

$$\frac{5 \times r \times 2}{10} = 4$$

$r = 4\%$

61. (1) $(4)^{(x+y)} = (256)$

$(4)^{(x+y)} = 4^4$

$x + y = 4^4$ ... (i)

$(256)^{x-y} = 4$

$(4)^{4x-4y} = 4^1$

$4x - 4y = 1$ ... (ii)

On solving equations (i) and (ii)

$$x = \frac{17}{8},\ y = \frac{15}{8}$$

62. (2) $x^2 - x - 6 = 0$

$x^2 - 3x + 2x - 6 = 0$

$x(x - 3) + 2\,(x - 3) = 0$

$(x - 3)\,(x + 2) = 0$

$x = -2, 3$

$px^3 - qx^2 - 7x - 6 = 0$

On putting $x = -2$,

$-8p - 4q + 14 - 6 = 0$

$2p + q = 2$ ... (i)

On putting $x = 3$,

$27p - 9q - 21 - 6 = 0$

$3p - q = 3$ ... (ii)

On solving equations (i) and (ii),

$p = 1,\ q = 0$

63. (1) $px^3 - 2x^2 - qx + 18 = 0$ ... (i)

$x^2 - 9 = 0$

$x^2 = 9$

$x = 3$

From equation (i),

$27p - 18 - 3q + 18 = 0$

or, $27p = 3q$

∴ $\frac{P}{q} = \frac{3}{27}$

⇒ $p : q = 1 : 9$

64. (2) $x + \frac{1}{x} = 5$

$$x^2 + \frac{1}{x^2} + 2 = 25$$

or, $x^2 + \frac{1}{x^2} = 23$ ... (i)

$$x^3 + \frac{1}{x^3} + 3\left(x + \frac{1}{x}\right) = 125$$

or, $x^3 + \frac{1}{x^3} = 125 - 3 \times 5$

$= 110$ ... (ii)

After Multiplying eq. (i) & (ii),

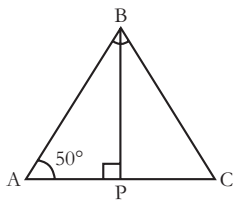
$$\left(x^2 + \frac{1}{x^2}\right)\left(x^3 + \frac{1}{x^3}\right) = 23 \times 110$$

or, $x^5 + x + \frac{1}{x} + \frac{1}{x^5} = 2530$

or, $x^5 + \frac{1}{x^5} + 5 = 2530$

∴ $x^5 + \frac{1}{x^5} = 2525$

65. (3)

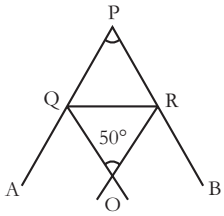


$\angle ABC = 90°$

$\angle BPC = 90°$

$\therefore$ ABP = 90° – 50°
$\angle$ABP = 40°
$\angle$PBC = 90° – 40°
$\angle$PBC = 50°

66. (3) We know,



$$\angle QOR = 90° - \frac{\angle QPR}{2}$$

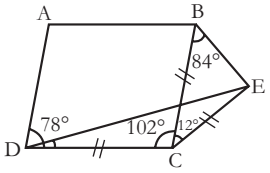
$$50° = 90° - \frac{\angle QPR}{2}$$

$$\frac{\angle QPR}{2} = 40°$$

$$\angle QPR = 80°$$

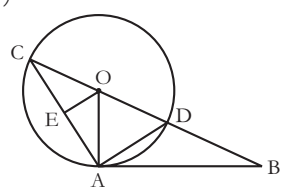
67. (3) In ΔBCE,

$\because$ BC = CE
$\therefore$ $\angle$CBE = $\angle$BEC
$\angle$BEC = 84°
$\angle$BCE = 180° – $\angle$CBE – $\angle$BEC
$\angle$BCE = 180° – 84° – 84°
BCE = 12°



In rhombus ABCD,
$\angle$DCB = 180° – $\angle$ADC
$\angle$DCB = 180° – 78° = 102°
$\therefore$ $\angle$DCE = $\angle$DCB + $\angle$BCE
$\angle$DCE = 102° + 12° = 114°
In ΔDCE,
$\because$ BC = CE
$\therefore$ DC = CE
$\therefore$ $\angle$CDE = $\angle$DEC
$\angle$CDE + $\angle$DEC + $\angle$DCE = 180°
$\angle$DEC + $\angle$DEC + 114° = 180°
2$\angle$DEC = 66°
$\angle$DEC = 33°

68. (3)



OA $\perp$ AB
OB = (36 – 10) cm = 26 cm
OA = 10 cm

$\therefore$ Area of $\Delta AOB = \frac{1}{2} OA \times AB$

$= \frac{1}{2} \times 10 \times 24 = 120$ sq. cm.

Again, $\angle CAD = 90°$
CD = 20
$AC^2 + AD^2 = CD^2$
$(16)^2 + (12)^2 = 20^2$
$\therefore$ AC = 16 cm
$\therefore$ CE = 8 cm
OC = 10 cm
$OE = \sqrt{10^2 - 8^2} = \sqrt{100 - 64}$
= 6 cm

$\therefore$ Area of $\Delta OAC = \frac{1}{2} \times AC \times OE$

$= \frac{1}{2} \times 16 \times 6 = 48$ sq. cm.

$\therefore$ Required area = 120 + 48
= 168 sq. cm

69. (1) $$\frac{2}{\cot\frac{A}{2} + \tan\frac{A}{2}} = \frac{2}{\frac{\cos\frac{A}{2}}{\sin\frac{A}{2}} + \frac{\sin\frac{A}{2}}{\cos\frac{A}{2}}}$$

$$= \frac{2\sin\frac{A}{2}\cos\frac{A}{2}}{\cos^2\frac{A}{2} + \sin^2\frac{A}{2}}$$

$$= \sin A$$

70. (3) $$\left(\frac{1}{\sec A + \tan A}\right)^2 = \left(\frac{1}{\frac{1}{\cos A} + \frac{\sin A}{\cos A}}\right)^2$$

$$= \left(\frac{\cos A}{1 + \sin A}\right)^2$$

$$= \frac{\cos^2 A}{(1 + \sin A)^2}$$

$$= \frac{1 - \sin^2 A}{(1 + \sin A)^2}$$

$$= \frac{(1 - \sin A)(1 + \sin A)}{(1 + \sin A)^2}$$

$$= \frac{(1 - \sin A)}{(1 + \sin A)}$$

71. (1) $(\text{cosec}^4 A - \cot^2 A) - (\cot^4 A + \text{cosec}^2 A)$
$= \text{cosec}^4 A - \text{cosec}^2 A - [\cot^2 A + \cot^4 A]$
$= \text{cosec}^4 A [\text{cosec}^2 A - 1] - \cot^2 A [1 + \cot^2 A]$
$= \text{cosec}^2 A \cot^2 A - \cot^2 A \text{cosec}^2 A$
= 0

72. (2) Required percentage increase

$$= \frac{6 - 3}{3} \times 100$$

= 100%

73. (3) Required answer = (7 – 3) × 100 = 400

74. (1) The total number of audience from second show
= 3 + 4.5 + 7
= 14.5
The total number of audience from third show
= 6 + 4 + 7.5
= 17.5
Required percentage increase

$$= \frac{17.5 - 14.5}{14.5} \times 100$$

= 20.69%

75. (4) Screen 1 = (5 + 3 + 6) × 350 = 14 × 350 = 4900
Screen 2 = (6 + 4.5 + 4) × 300 = 14.5 × 300 = 4350
Screen 3 = (6.5 + 7 + 7.5) × 250 = 21 × 250 = 5250

PART-IV (ENGLISH LANGUAGE)

76. (2) In the given sentence, part (2) has an error. To correct the sentence use 'to pass' in place of 'to pass away'.

77. (3) In the given sentence, part (3) has an error. To correct the sentence use 'than' in place of 'when'.

78. (4) **Unless** is used to say that something can only happen in a particular situation.

79. (3) **Hindrance** a thing that makes it more difficult for somebody to do something.
Sentence → The high price is a major hindrance to potential buyers.

80. (2) **Lethargy (Noun):** a lack of energy and enthusiasm; dullness; drowsy; tiredness.
Sentence → There was an air of lethargy about him.

81. (1) **Hoodwink (Verb):** deceive; dupe; defraud; cheat.

Sentence → He hookwinked us into agreeing.

82. (4) Opposite of Multifaceted is **Simple (Adjective):** easy; uncomplicated.

Sentence → • It is a multifaceted business; offering a range of services.

• The instructions were written in simple English.

83. (2) Opposite of Trepidation is **Calm (Noun):** not showing or feeling nervousness; quiet situation.

Sentence → • We view future developments with some trepidation.

• It was the calm of the countryside that he loved so much.

84. (3) **Kick the bucket** to die.

Sentence → When the old woman finally kicked the bucket there was no mention of yours truly in the will.

85. (3) **An axe to grind** have a selfish motive.

Sentence → Environmentalists have no political axe to grind, they just want to save the planet.

86. (1) For improvement of sentence use 'are looking forward to' in place of 'are looking forward for'.

87. (4) No improvement is required in the given sentence.

88. (4) Best substitute of the phrase is **Vindictive (Adjective):** Wanting or trying to hurt somebody without good reason.

Sentence → She was immature, spiteful, even vindictive at times.

89. (2) Best substitute of the phrase is **Nemesis (Noun):** A punishment or defeat that somebody deserves and cannot avoid.

Sentence → The criminal, who distrusts me greatly, asks me for the whereabouts of my nemesis.

90. (2) Correctly spelt word → Glamorous.

91. (4) Correctly spelt word → Sustenance.

92. (4) Logical order of the sentences to form a coherent paragraph → QSRP.

93. (1) Logical order of the sentences to form a coherent paragraph → QSRP.

94. (2) Passive/Active Vocie →

The old lady was being laughed at by the kids.

95. (4) Indirect/Direct Speech

• My cousin asked me whether I wanted some more chocolates.

96. (2) Best option for blank → democratic.

97. (4) Best option for blank →

Vital (Adjective): essential; indispensable.

98. (3) Best option for blank → role

99. (2) Best option for blank →

Minimal (Adjective): very little; minimum.

100. (4) Best option for blank → welcomed.

❑❑❑

17

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 08 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Car : Road : : Ship : ?
(1) Water
(2) Air
(3) Road
(4) Both Air and Water

2. GLOW : FJNU : : PTEL : ?
(1) ORFN (2) ORDJ
(3) ORJD (4) OPNF

3. 5 : 124 : : 6 : ?
(1) 215 (2) 216
(3) 217 (4) 220

Directions (4–6): In the following questions, find the odd word/letter/number pair from the given alternatives.

4. (1) Error : Accurate
(2) Careless : Casual
(3) Strength : Lethargy
(4) Gloomy : Cheerful

5. (1) FUGT (2) KPLO
(3) DWEV (4) CWDX

6. (1) 11 – 120 (2) 17 – 290
(3) 21 – 442 (4) 12 – 145

7. Arrange the given words in the sequence in which they occur in the dictionary.
1. Pragmatic 2. Protect
3. Pastel 4. Postal
5. Pebble
(1) 43521 (2) 35412
(3) 34512 (4) 43512

Directions (8–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

8. Q, P, O, N, ?
(1) M (2) L
(3) O (4) J

9. 6, 9, 15, 24, 39, 63,?
(1) 97 (2) 115
(3) 102 (4) 124

10. P and Q are brothers. P is the father of S. R is the only son of Q and is married to U. How is U related to S?
(1) Sister-in-law (2) Mother-in law
(3) Sister (4) Mother

11. Nine years later, age of B will be equal to the present age of A. Sum of A's age 3 years later and B's age 4 years ago is 76. If C is half of the present age of B, then what will be C's age (in years) after 10 years?
(1) 32 years (2) 36 years
(3) 27 years (4) 31 years

12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
Herringbone
(1) Biner (2) None
(3) Bane (4) Hinge

13. In a certain code language, "NIGHT" is written as "ODDGM" and "DARK" is written as "GOYC". How is "GREEN" written in that code Language?
(1) IABPF (2) MCBNB
(3) OGHVL (4) FPBAI

14. In the following question, correct the equation by interchanging two signs.
4 × 3 – 6 ÷ 2 + 7 = 8
(1) – and + (2) × and –
(3) ÷ and × (4) × and +

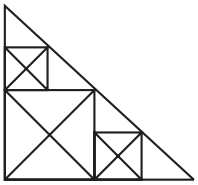
15. If 3 # 4 % 8 = 6 and 9 % 4 # 3 = 12, then 12 % 6 # 24 = ?
(1) 4 (2) 3
(3) 5 (4) 6

16. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

7	6	3
2	5	1
8	9	4
115	273	?

(1) 14 (2) 15
(3) 16 (4) 18

17. How many triangles are there in the given figure?



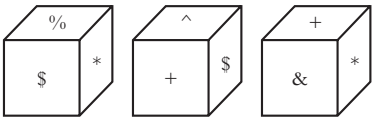
(1) 32 (2) 34
(3) 37 (4) 40

18. In each of the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements?

Statements:
Some boys are hardworking.
No intelligent are boys.

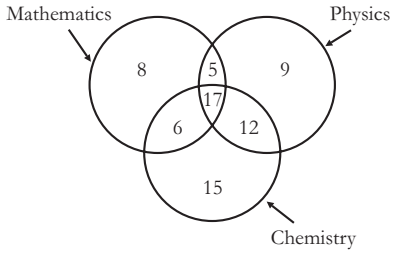
Conclusions:
I. Some hardworking are not intelligent.
II. All hardworking are intelligent.
III. Some intelligent are not hardworking.
(1) Only Conclusion I follows
(2) Conclusions I and III follow
(3) All conclusions follow
(4) No conclusion follows

19. Three positions of a cube are shown below. What will come opposite to face containing '$'?



(1) % (2) &
(3) ^ (4) +

20. In the given figure, how many people study only 2 subjects?

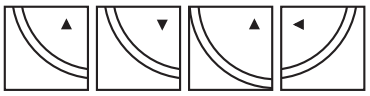


(1) 11 (2) 23
(3) 12 (4) 40

21. Which answer figure will complete the pattern in the question figure?

Question Figure

Answer Figures

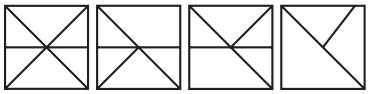


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

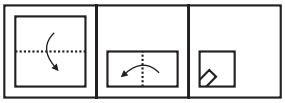
Answer Figures



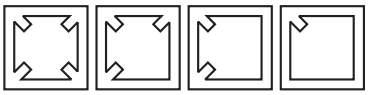
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figure



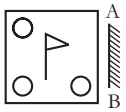
Answer Figures



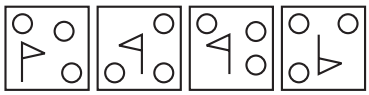
(1) (2) (3) (4)

24. If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'C' can be represented by 10, 34 etc., and 'D' can be represented by 85, 98 etc. Similarly, you have to identify the set for the word "STEAL".

Matrix-I

	0	1	2	3	4
0	T	S	C	K	E
1	C	K	E	T	C
2	K	E	S	C	T
3	S	T	K	E	C
4	E	C	T	S	K

Matrix-II

	5	6	7	8	9
5	P	D	A	I	L
6	L	I	D	A	P
7	I	A	L	P	D
8	D	P	I	L	A
9	A	L	P	D	I

(1) 01, 13, 04, 76, 66
(2) 14, 31, 40, 95, 59
(3) 22, 42, 21, 69, 97
(4) 43, 24, 33, 57, 58

PART-II
(GENERAL AWARENESS)

26. Which one of the following is a component of Food Security System?
(1) Buffer stock
(2) Minimum support price
(3) Fair price shops
(4) Mid day meals

27. What is the accepted average Calorie requirement for rural area in India?
(1) 2100 (2) 2200
(3) 2300 (4) 2400

28. Whose recommendation is mandatory to impeach the President of India from his office before the completion of his/her term?

(1) The Prime Minister
(2) The Speaker of the Lok Sabha
(3) The Chief Justice of India
(4) The two houses of the parliament

29. How many types of writ are there in the Indian Constitution?
(1) 5 (2) 4
(3) 3 (4) 2

30. Who has built the Vijay Stambha (Tower of Victory) in Chittorgarh?
(1) Maharana Pratap
(2) Rana Kumbha
(3) Rana Sanga
(4) Kunwar Durjan Singh

31. Who raised the slogan "Swaraj is my birthright and I shall have it"?
(1) Mahatma Gandhi
(2) Subhash Chandra Bose
(3) Bal Gangadhar Tilak
(4) Lala Lajpat Rai

32. Which Indian state is the largest in terms of the total area covered?
(1) Maharashtra
(2) Madhya Pradesh
(3) Rajasthan
(4) Tamil Nadu

33. Which Indian state has the longest Coastline?
(1) Kerala
(2) Gujarat
(3) Andhra Pradesh
(4) Tamil Nadu

34. Auxiliary bud develops into which of the following part of the plant?
(1) Fruit (2) Leaf
(3) Branch (4) Roots

35. Xylem helps in transportation of which of the following?
(1) Food
(2) Water
(3) Nutrients
(4) Both food and water

36. Who proposed five kingdom classification?
(1) Ernst Mayr
(2) R. H. Whittaker
(3) M. W. Beijerinck
(4) D. I. Ivanovsky

37. What is the other name of Galileo's law of falling bodies?
(1) Law of motion
(2) Newton's first law
(3) Newton's second law
(4) Newton's third law

38. Which of the following device is best suited for measuring the temperature inside metallurgical furnaces?
(1) Pyrometer
(2) Thermocouple
(3) Thermometer
(4) Thermistor

39. What is the full form of 'LAN'?
(1) Line Area Network
(2) Linear Area Network
(3) Local Area Network
(4) Land Area Network

40. Which acid is released when an Ant bites?
(1) Hydrochloric Acid
(2) Formic Acid
(3) Acetic Acid
(4) Phosphoric Acid

41. Which among the following is an example of solid sol?
(1) Milk of magnesia
(2) Foam
(3) Coloured gemstones
(4) Rubber

42. Which metal is responsible for Itai-Itai disease?
(1) Cadmium (2) Nickel
(3) Chromium (4) Mercury

43. 'Vikalp' is a scheme launched by Indian Railways to help wait-listed passengers. Which of the following is not true about this scheme?
(1) Confirmed berths in alternate trains.
(2) No-extra charges will be taken from passengers.
(3) Wait-listed passengers can avail opportunity of travelling in Rajdhani/Shatabdi/Special trains even when booking made is in other mail/express trains.
(4) Vikalp scheme will be initially available for e-tickets only.

44. Who discovered the Cholera causing germ?
(1) Filippo Pacini
(2) Robert Koch
(3) M. Laveran
(4) Felix Hoffman

45. Match the following:

	Player		Sport
1.	Mithali Raj	a.	Hockey
2.	Poonam Rani	b.	3000 m Steeple Chases
3.	Lalita Babar	c.	Cricket

(1) 1-c, 2-b, 3-a
(2) 1-a, 2-b, 3-c
(3) 1-a, 2-c, 3-b
(4) 1-c, 2-a, 3-b

46. 'Hunar Haat' an exhibition to exhibit and promote the arts and artisans from minority community was launched at which of the following events?
(1) Pushkar Fair, 2016
(2) IITF, New Delhi, 2016
(3) Suraj Kund Craft Mela, 2017
(4) Kumbh Mela, 2015

47. Which movie won the award for the best movie at the Oscar Awards 2017?
(1) La La Land
(2) Arrival
(3) Moonlight
(4) Manchester by the Sea

48. Who is the author of the book titled 'Citizen and Society'?
(1) Pranab Mukherjee
(2) Hamid Ansari
(3) Nandan Nilekani
(4) Satyajit Ray

49. With which country India has recently signed a MoU for Water Conservation in India?
(1) France (2) Germany
(3) Israel (4) Bangladesh

50. Which among the following neighbouring country of India is the largest producer of Opium in the World?
(1) Pakistan (2) Afghanistan
(3) Sri Lanka (4) Maldives

PART-III
(QUANTITATIVE APTITUDE)

51. How many numbers are there from 300 to 650 which are completely divisible by both 5 and 7?
(1) 8 (2) 9
(3) 10 (4) 12

52. Raman can do a work in 5 days, Jatin can do the same work in 7 days and Sachin can do the same work in 9 days. If they do the same work together and they are paid ₹ 2,860/, then what is the share (in ₹) of Raman?
(1) ₹ 1,260/- (2) ₹ 700/-
(3) ₹ 900/- (4) ₹ 870/-

53. If the diameter of a sphere is 14 cm, then what is the surface area (in cm^2) of the sphere?
(1) 616 cm^2 (2) 308 cm^2
(3) 462 cm^2 (4) 636 cm^2

54. After two successive discounts of 20% and 35%, an article is sold for ₹ 50,700/-. What is the marked price (in ₹) of the article?
(1) ₹ 92,500/- (2) ₹ 98,500/-
(3) ₹ 97,500/- (4) ₹ 94,000/-

55. ₹ 3,200/- is divided among A, B and C in the ratio of 3 : 5 : 8 respectively. What is the difference (in ₹) between the share of B and C?
(1) ₹ 400/- (2) ₹ 600/-
(3) ₹ 800/- (4) ₹ 900/-

56. The average of 5 members of a family is 24 years. If the youngest member is 8 years old, then what was the average age (in years) of the family at the time of the birth of the youngest member?
(1) 16 years (2) 20 years
(3) 24 years (4) 32 years

57. If the price of pen decreases by 20%, then a man can buy 10 more pens for ₹ 100/-. What is the new price (in ₹) of each pen?
(1) ₹ 1 (2) ₹ 2/-
(3) ₹ 4/- (4) ₹ 5/-

58. After deducting 60% from a certain number and then deducting 15% from the remainder, 1428 is left. What was the initial number?
(1) 4200 (2) 3962
(3) 4150 (4) 4300

59. A train travels 40% faster than a car. Both start from point A at the same time and reach point B, 140 km away at the same time. On the way the train takes 25 minutes for stopping at the stations. What is the speed (in km/h) of the train?
(1) 67 km/h (2) 134.4 km/h
(3) 145.9 km/h (4) 160 km/h

60. A certain sum of money triples itself in 5 years at simple interest. In how many years it will be five times?
(1) 5 years (2) 8 years
(3) 10 years (4) 15 years

61. If $x + \left(\frac{1}{x}\right) = 2$, then what is the value of $x^{64} + x^{121}$?
(1) 0 (2) 1
(3) 2 (4) – 2

62. If $x = 6 + 2\sqrt{6}$, then what is the value of $\sqrt{x-1} + \frac{1}{\sqrt{x-1}}$?
(1) $2\sqrt{3}$ (2) $3\sqrt{2}$
(3) $2\sqrt{2}$ (4) $3\sqrt{3}$

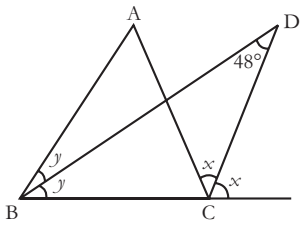
63. If $a + b + c = 27$, then what is the value of $(a-7)^3 + (b-9)^3 + (c-11)^3 - 3(a-7)(b-9)(c-11)$?
(1) 0 (2) 9
(3) 27 (4) 81

64. If $x = \frac{2\sqrt{15}}{\sqrt{3}+\sqrt{5}}$, then what is the value of $\frac{x+\sqrt{5}}{x-\sqrt{5}} + \frac{x+\sqrt{3}}{x-\sqrt{3}}$?
(1) $\sqrt{5}$ (2) $\sqrt{3}$
(3) $\sqrt{15}$ (4) 2

65. The perimeter of an isosceles triangle is 32 cm and each of the equal sides is $\frac{5}{6}$ times of the base. What is the area (in cm^2) of the triangle?
(1) 39 cm^2 (2) 48 cm^2
(3) 57 cm^2 (4) 64 cm^2

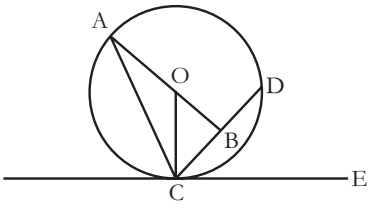
66. If length of each sides of a rhombus PQRS is 8 cm and ∠PQR = 120°, then what is the length (in cm) of QS?
(1) $4\sqrt{5}$ cm (2) 6 cm
(3) 8 cm (4) 12 cm

67.



In the given figure, ABC is a triangle. The bisectors of internal ∠B and external ∠C interest at D. If ∠BDC = 48°, then what is the value (in degrees) of A?
(1) 48° (2) 96°
(3) 100° (4) 114°

68.



In the given figure, O is the centre of the circle and ∠DCE = 45°. If CD = $10\sqrt{2}$ cm, then what is the length (in cm) of AC? CB = BD
(1) 14 cm (2) 15.5 cm
(3) 18.5 cm (4) 20 cm

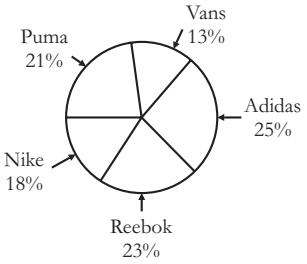
69. What is the simplified value of $\frac{\sin 2A}{1+\cos 2A}$?
(1) tan A (2) cot A
(3) sin A (4) cos A

70. What is the simplified value of $\left(\frac{\sec A}{\cot A + \tan A}\right)^2$?
(1) $1 - \cos^2 A$ (2) $2\sin^2 A$
(3) $\sec^2 A$ (4) $\text{cosec}^2 A$

71. What is the simplified value of $1 + \tan A \tan\left(\frac{A}{2}\right)$?

(1) $\sin\left(\frac{A}{2}\right)$ (2) cos A
(3) sec A (4) sin A

Directions (72–75): The pie chart given below shows the number of shoes of 5 different brands in multi brand store. There are total 1200 shoes.



72. How many shoes are there of Reebok brand?
(1) 230 (2) 276
(3) 286 (4) 216

73. What is the difference in number of shoes of Puma and Vans?
(1) 96 (2) 156
(3) 84 (4) 112

74. The difference between the number of shoes of Reebok and Nike is same as the difference between which of the following two brands?
(1) Puma and Adidas
(2) Reebok and Adidas
(3) Vans and Nike
(4) Nike and Adidas

75. Puma shoes are how much percent more than the Nike Shoes?
(1) 14.28% (2) 16.66%
(3) 25% (4) 21.33%

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. No sooner did I come out of my home to go to market (1)/ when it started raining heavily (2)/ which drenched me completely. (3)/ No error (4)

77. Unless you don't obey (1)/ your elders you (2)/ will not succeed in your life. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. Fourteen kilometre ..... not a short distance, to reach to my office daily.
(1) are (2) has
(3) have (4) is

79. Good reading ..... the sense of liberal educated mind.
(1) beliefs (2) leads
(3) reflects (4) starts

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Frivolous
(1) Captious (2) Wise
(3) Puerile (4) Spiritual

81. Petrify
(1) Adorn (2) Calm
(3) Curious (4) Harden

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Gregarious
(1) Affable (2) Genial
(3) Introver (4) Urbane

83. Tremulous
(1) Feeble (2) Frugal
(3) Stable (4) Vital

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. The alpha and the omega
(1) Happy and sad
(2) The beginning and the end
(3) The love and the hatred
(4) Truth and dare

85. Throw up the sponge
(1) To attack
(2) To laugh at someone
(3) To surrender
(4) To talk loudly

Directions (86–87): Improve the **bold** part of the sentence.

86. I had **a few** eggs in the fridge, so we need to go to the market to buy them.
(1) a little
(2) few
(3) little
(4) No improvement

87. My brother is indifferent **about** whatever I say.
(1) in
(2) of
(3) to
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

88. A funeral poem
(1) Elegy
(2) Pandemonium
(3) Parody
(4) Sonnet

89. One who walks in sleep
(1) Drover
(2) Fastidious
(3) Numismatist
(4) Somnambulist

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Gaurantee (2) Itinerary
(3) Magnificent (4) Writing

91. (1) Etiquette (2) Exquisite
(3) Restaurant (4) Scavenger

Directions (92–93): These questions below consist of a set of labelled sentences. These sentences, when properly sequenced form a coherent paragraph. Select the most logical order of sentences from among the options.

92. P. But he did not know how to find one at that hour.

Q. It was his first visit to the city and he didn't know where to go.
R. Mohanlal's train was late and it reached Kolkata a little after midnight.
S. He thought he would go to a choultry where he would not have to pay rent.
(1) PSQR (2) QRSP
(3) RQSP (4) RSQP

93. P. And slowly, you reach the pinnacle of self-awareness, experiencing a unity with all life.
Q. If you transform your energy positively, it naturally becomes compassion and love.
R. Once you experientially are a part of everything then nobody needs to teach you morality.
S. Then you can do something to improve the situation, but without anger.
(1) PQRS (2) QPRS
(3) RQPS (4) RSPQ

94. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

Ram was singing a beautiful song for his mother.
(1) A beautiful song was being sung by Ram for his mother.
(2) A beautiful song was sang by Ram for his mother.
(3) A beautiful song was sung by Ram for his mother.
(4) A beautiful song was sung for his mother by Ram.

95. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

Priya advised me not to go to school the next day.
(1) "Don't go to school next day" Priya said to me.
(2) "Don't go to school tomorrow" Priya said to me.
(3) Priya said, "Will you not go to school tomorrow?"
(4) Priya told me that, "Don't go to school tomorrow."

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Job performance is ...**96**... by a number of factors. Motivation alone does not lead to increased performance. Ability and technology moderates the relationship between motivation and performance. The higher the levels of ability and motivation the ...**97**... the level of performance will be. However, increasing motivation beyond an ...**98**... level tends to ...**99**... a dysfunctional result because it is ...**100**... by an increased level of anxiety.

96. (1) Affected (2) Effected
(3) Influenced (4) Measured

97. (1) Higher (2) Larger
(3) Lower (4) Smaller

98. (1) Certain (2) Desired
(3) Increased (4) Optimal

99. (1) Deduce
(2) Introduce
(3) Produce
(4) Reduce

100. (1) Abandoned
(2) Accompanied
(3) Affiliated
(4) Amalgamated

Short Answers

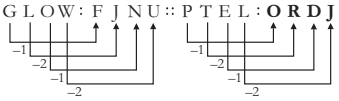
1. (1)	**2.** (2)	**3.** (1)	**4.** (2)	**5.** (4)	**6.** (1)	**7.** (2)	**8.** (1)	**9.** (3)	**10.** (1)
11. (3)	**12.** (3)	**13.** (1)	**14.** (1)	**15.** (2)	**16.** (2)	**17.** (3)	**18.** (1)	**19.** (2)	**20.** (2)
21. (1)	**22.** (1)	**23.** (1)	**24.** (2)	**25.** (2)	**26.** (1)	**27.** (4)	**28.** (4)	**29.** (1)	**30.** (3)
31. (3)	**32.** (3)	**33.** (2)	**34.** (3)	**35.** (4)	**36.** (4)	**37.** (2)	**38.** (1)	**39.** (3)	**40.** (2)
41. (3)	**42.** (1)	**43.** (1)	**44.** (1)	**45.** (4)	**46.** (2)	**47.** (3)	**48.** (2)	**49.** (3)	**50.** (2)
51. (3)	**52.** (1)	**53.** (1)	**54.** (3)	**55.** (2)	**56.** (2)	**57.** (2)	**58.** (1)	**59.** (2)	**60.** (3)
61. (3)	**62.** (1)	**63.** (1)	**64.** (4)	**65.** (2)	**66.** (3)	**67.** (2)	**68.** (3)	**69.** (1)	**70.** (1)
71. (3)	**72.** (2)	**73.** (1)	**74.** (3)	**75.** (2)	**76.** (2)	**77.** (1)	**78.** (4)	**79.** (3)	**80.** (3)
81. (4)	**82.** (3)	**83.** (3)	**84.** (2)	**85.** (3)	**86.** (2)	**87.** (3)	**88.** (1)	**89.** (4)	**90.** (1)
91. (1)	**92.** (3)	**93.** (2)	**94.** (1)	**95.** (2)	**96.** (1)	**97.** (1)	**98.** (4)	**99.** (3)	**100.** (2)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (1) Car runs on the road. In the same way, ship runs on the water.

2. (2) G L O W : F J N U :: P T E L : **O R D J**



3. (1) 5 : 124 :: 6 : **215**

4. (2) Except the word-pair 'Careless-Casual', in all others the words are antonymous to each other.

5. (4) Except CWDX, all others have 1 vowel.

6. (1) $\boxed{(11)^2 - 1 = 121 - 1 = 120}$

$(17)^2 + 1 = 289 + 1 = 290$

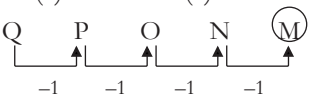
$(21)^2 + 1 = 441 + 1 = 442$

$(12)^2 + 1 = 144 + 1 = 145$

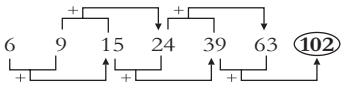
7. (2) Arrangement of the given words as per English dictionary is as follows:

Pastel (3) → Pebble (5) → Postal (4) → Pragmatic (1) → Protect (2).

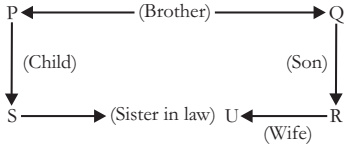
8. (1)



9. (3)



10. (1)



∴ U is sister-in-law of S.

11. (3) B's present age = x years

C's present age = $\frac{x}{2}$ years

A's present age = $(x + 9)$ years

According to question,

$x + 9 + 3 + x - 4 = 76$

$2x + 8 = 76$

$2x = 68$

$\Rightarrow \quad x = 34$

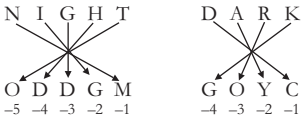
C's age after 10 years = $\frac{x}{2} + 10$

$= \frac{34}{2} + 10$

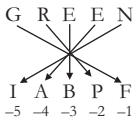
$= 17 + 10 = 27$ years

12. (3) The word 'Bane' cannot be formed using the letters of the given word because the word 'Herringbone' does not have letter 'a'.

13. (1) As,



Similarly,



14. (1) $4 \times 3 - 6 \div 2 + 7 = 8$

From, option (1),

$4 \times 3 + 6 \div 2 - 7 = 8$

$12 + 3 - 7 = 8$

$15 - 7 = 8$

$8 = 8$

15. (2) $\boxed{\# \Rightarrow +}$ $\boxed{\% \Rightarrow \times}$

$3 \# 4 \% 8 = \frac{3}{4} \times 8 = 6$

$9 \% 4 \# 3 = 9 \times \frac{4}{3} = 12$

$\therefore \quad 12 \% 6 \# 24 = 12 \times \frac{6}{24} = 3$

16. (2) As,

$7 \times 2 \times 8 + 3 = 112 + 3$

$= 115$

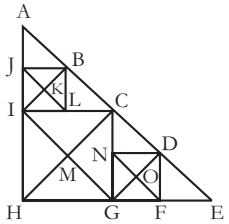
$6 \times 5 \times 9 + 3 = 270 + 3$

$= 273$

Similarly,

$3 \times 1 \times 4 + 3 = 12 + 3 =$ **15**

17. (3)



Triangles = AJB, KBJ, KJI, KIL, KLB, BJI, JIL, ILB, LBJ, AIC, MCI, MIH, MHG, MGC, IHG, HGC, GLI, CIH, CND, NGF, GFD, FDN, DNG, ODN, ONG, OGF, OFD, DFE, CGE, BAI, BIC, CAH, CHE, DCG, DGE, BLC, AHE

∴ Number of triangle = 37

18. (1)

19. (2) The symbol %, *, ^ and + are on the faces adjacent to '$'. Therefore & lies opposite $.

20. (2) Number of people who study only two subjects:

Mathematics & Physics = 5

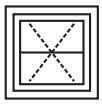
Mathematics & Chemistry = 6

Physics & Chemistry = 12

Required sum = 5 + 6 + 12 = 23

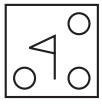
21. (1)

22. (1)



23. (1)

24. (2)



25. (2) S → 30, 01, 22, 43, **14**

T → 00, **31**, 42, 13, 24

E → **40**, 21, 12, 33, 04

A → **95**, 76, 57, 68, 89

L → 65, 96, 77, 88, **59**

For given word STEAL, group of letters can be represented by the numbers → 14, 31, 40, 95, 59

PART-II
(GENERAL AWARENESS)

26. (1) **Buffer Stock:** It gives the basic and most flexible instrument for

moderating short term effects of supply or production shortfalls.

Maintaining a buffer stock is an important constituent of the Government's food policy.

The concept of a buffer stock was first familiarised during the 4th Five Year Plan (1969–74).

27. (4) The calorie requirements for rural and urban person in India are fixed at 2400 and 2100 calories respectively.

28. (4) **Removal of President of India:** The President of India can be removed from the office for violation of the Constitution by impeachment. Such a motion of impeachment can be initiated by any House of Parliament. In such a case one fourth of the members, of the house, intending to move such a motion have to serve a fourteen days notice in writing. If two-thirds of the members support the motion that it is passed for consideration of the other House.

29. (1) Article 226 empowers the High Courts to issue writs in the nature of habeas corpus, mandamus, prohibition, certiorari and quo warranto or any of them for the enforcement of any of the fundamental rights or for any other purpose. The jurisdiction of the High Courts under Article 226 is wider than that of the Supreme Court under Article 32.

30. (3) **Vijay Stambh (Tower of Victory):** It was established by Maharana Kumba in Chittorgarh is a nationalistic master work built to remember the triumph of the kingdom over the Mohammed Khilji. It was constructed between 1442 AD and 1449 AD, to commemorate King Rana Kumbha victory over joint armies of Malwa and Gujarat which was led by Khilji.

31. (3) **Lokmanya Bal Gangadhar Tilak:** He was an Indian social reformer and freedom activist. His famous declaration "Swaraj is my birthright and I shall have it" served as an inspiration for future revolutionaries during India's struggle for freedom. The British Government termed him as the "Father of Indian Unrest".

32. (3) Rajasthan is the largest Indian state with an area of 3,42,239 sq. km comprising of the 11% of the total geographical area of the country. It stretches lengthwise 869 km from west to east and 826 km from north to south.

33. (2) **Gujarat:** It has the longest coast line of 1290 kms. It comprises of three geographical regions. The peninsula, traditionally known as Saurashtra. Kutch on the north-east is barren and rocky and contains the famous Rann of Kutch.

34. (3) **Axillary Bud:** It is an embryonic shoot located in the axil of a leaf. Each bud has the potential to form shoots and may be specialized in producing either vegetative shoots (stems and branches) or reproductive shoots (flowers).

35. (4) Xylem are plant vascular tissue that conveys water and dissolved minerals from the roots to the rest of the plant and also provides physical support.

36. (4) **R.H. Whittaker:** He proposed the five kingdoms of classification in 1969. This classification was based upon certain characters like mode of nutrition, thallus organisation, cell structure, phylogenetic relationships and reproduction. The classification includes five kingdoms Monera, Protista, Fungi, Plantae and Animalia.

37. (2) The Newton's First Law states, "A body at rest will remain at rest and a body in motion will remain in motion unless it is acted upon by an external force". Netwon expanded on the work of Galileo to better define the relationship between energy and motion.

38. (1) **Pyrometer:** A device for measuring relatively high temperatures, such as are encountered in furnaces.

39. (3) **Local Area Network (LAN):** It is a group of computers and associated devices that share a common communications line or wireless link to a server.

40. (2) **Formic Acid:** The acid produced by ants. Chemically, it is a simple carboxylic acid. A major use of formic acid is as a preservative and antibacterial agent in livestock feed.

41. (3) **Sol:** It is a type of colloid in which solid particles are suspended in a liquid. The particles in a sol are very small. Examples are – Gemstones, Pearls and some coloured Glass.

42. (1) **Itai-Itai:** The disease first occurred in 1912 within Toyama Prefecture. The cause of itai-itai disease was determined to be cadmium poisoning in the drinking water from the Jinzu River basin.

43. (1) **Vikalp:** Under the new reservation scheme or alternate train accommodation scheme (ATAS), passengers who have booked tickets in other mail or express trains, can avail the option of travelling in premium trains to their booked destinations with no extra cost.

44. (1) **Filippo Pacini (25 May 1812 – 9 July 1883):** He was an Italian anatomist, posthumously famous for isolating the cholera bacterium Vibrio cholerae.

45. (4)

Player	Sport
Mithali Raj	Cricket
Poonam Rani	Hockey
Lalita Babar	3000 m Steeple Chases

46. (2) **Hunar Haat:** It is a platform of Ministry of Minority Affairs where exquisite pieces of Handicraft & Handloom prepared by inmates of Tihar Jail and master artisans from across the country are displayed, was inaugurated at India International Trade Fair at Pragati Maidan in 2016.

47. (3) **Moonlight (First LGBT Film):** First film with an all-black cast and the second lowest-grossing film domestically to win the Oscar for Best Picture in 2017.

48. (2) 'Citizen and Society' is written by former Vice President Hamid Ansari. The book is a collection of lectures on diverse themes such as polity, security and empowerment.

49. (3) Cabinet approved MoU between India and Israel on National Campaign for Water Conservation in India in June 2017.

50. (2) Afghanistan's opium poppy production goes into more than 90% of heroin worldwide. Opium produced in Afghanistan is typically exported in its raw form, or as heroin or morphine.

PART-III (QUANTITATIVE APTITUDE)

51. (3) The smallest number completely divisible by both 5 and 7 = 315

The biggest number completely divisible by both 5 and 7 = 630

$T_n = a + (n-1)d$

or, $630 = 315 + (n-1) \times 35$

or, $315 = (n-1) \times 35$

or, $n - 1 = 9$

$\therefore \quad n = 10$

52. (1) Ratio $= \frac{1}{5} : \frac{1}{7} : \frac{1}{9}$

$= 63 : 45 : 35$

Raman's share

$= \frac{2860 \times 63}{(63 + 45 + 35)} = 1260$

53. (1) Surface area of the sphere $= 4\pi r^2$

$= 4 \times \frac{22}{7} \times \left(\frac{14}{2}\right)^2 = 616 \text{ cm}^2$

54. (3) Marked price of the article

$= 50700 \times \frac{100}{80} \times \frac{100}{65} = ₹\ 97{,}500$

55. (2) Difference between the share of B and C

$= 3200 \times \frac{(8-5)}{(3+5+8)}$

$= \frac{3200 \times 3}{16} = 600$

56. (2) Average age of the family at the time of the birth of the youngest member

$= \frac{5 \times 24 - 5 \times 8}{4}$

$= \frac{120 - 40}{4}$

$= \frac{80}{4} = 20$ years

57. (2) Price of the pen = ₹ x

Pens that can be purchased for ₹ 100

$= \frac{100}{x}$

The new price of the pen

$= x \times \frac{80}{100} = \frac{4x}{5}$

Pens that can be purchased for ₹ 100 with reduced cost $= \frac{100 \times 5}{4x} = \frac{125}{x}$

According to question,

$\frac{125}{x} - \frac{100}{x} = 10$

$\frac{25}{x} = 10 \Rightarrow x = 2.5$

Now, price of the pen $= \frac{4}{5} \times 2.5$

$= ₹\ 2$

58. (1) Initial number = x

According to question,

$x \times \frac{40}{100} \times \frac{85}{100} = 1428$

$x = \frac{1425 \times 20 \times 5}{17 \times 2}$

$x = 4200$

59. (2) Speed of the car = x km/h

The speed of the train

$= x \times \frac{140}{100} = \frac{7x}{5}$ km/h

According to question,

$\frac{140}{x} = \frac{140 \times 5}{7x} + \frac{25}{60}$

$\frac{140}{x}\left[\frac{7-5}{7}\right] = \frac{5}{12}$

$x = 4 \times 2 \times 12 = 96$

Speed of the train

$= 96 \times \frac{7}{5} = 134.4$ km/h

60. (3) Principal = ₹ P

$\frac{P \times R \times 5}{100} + P = 3P$

$r = \frac{2 \times 100}{5} = 2 \times 20$

$r = 40\%$

Let the sum of money will be five times in t years

$\frac{P \times 40 \times t}{100} + P = 5P$

$\frac{2t}{5} = 4$

$t = 10$ years

61. (3) $x + \frac{1}{x} = 2$

or, $x^2 + 1 = 2x$

or, $x^2 - 2x + 1 = 0$

or, $(x-1)^2 = 0$

or, $(x-1) = 0$

$x = 1$

$x^{64} + x^{121} = (1)^{64} + (1)^{121}$

$= 1 + 1 = 2$

62. (1) $x = 6 + 2\sqrt{6}$

$x - 1 = 6 + 2\sqrt{6} - 1$

$x - 1 = 5 + 2\sqrt{6}$

$\sqrt{x-1} = \sqrt{5 + 2\sqrt{6}}$

$= \sqrt{(\sqrt{3} + \sqrt{2})^2}$

$\sqrt{x-1} = \sqrt{3} + \sqrt{2}$

$\frac{1}{\sqrt{x-1}} = \frac{1}{\sqrt{3}+\sqrt{2}} \times \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$

$\frac{1}{\sqrt{x-1}} = \sqrt{3} - \sqrt{2}$

$\sqrt{x-1} + \frac{1}{\sqrt{x-1}} = \sqrt{3} + \sqrt{2} +$

$\sqrt{3} - \sqrt{2} = 2\sqrt{3}$

63. (1) Let $x = a - 7$, $y = b - 9$, $z = c - 11$

Adding all three,

$x + y + z = a + b + c - 27$

$\because \quad a + b + c = 27$

$\therefore \quad x + y + z = 27 - 27$

$x + y + z = 0$

$x^3 + y^3 + z^3 = 3xyz = 0$

$(a-7)^3 + (b-9)^3 + (c-11)^3 - 3(a-7)(b-9)(c-11) = 0$

64. (4) $x = \frac{2\sqrt{15}}{\sqrt{3}+\sqrt{5}}$

$\frac{x}{\sqrt{5}} = \frac{2\sqrt{3}}{\sqrt{3}+\sqrt{5}}$

$\frac{x+\sqrt{5}}{x-\sqrt{5}} = \frac{2\sqrt{3}+\sqrt{3}+\sqrt{5}}{2\sqrt{3}+\sqrt{3}-\sqrt{5}}$

$\frac{x+\sqrt{5}}{x-\sqrt{5}} = \frac{3\sqrt{3}+\sqrt{5}}{\sqrt{3}-\sqrt{5}}$

$\frac{x}{\sqrt{3}} = \frac{2\sqrt{5}}{\sqrt{3}+\sqrt{5}}$

$\frac{x+\sqrt{3}}{x-\sqrt{3}} = \frac{2\sqrt{5}+\sqrt{3}+\sqrt{5}}{2\sqrt{5}-\sqrt{3}-\sqrt{5}}$

$\frac{x+\sqrt{3}}{x-\sqrt{3}} = \frac{3\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$

$\frac{x+\sqrt{5}}{x-\sqrt{5}} + \frac{x+\sqrt{3}}{x-\sqrt{3}} = \frac{3\sqrt{3}+\sqrt{5}}{\sqrt{3}-\sqrt{5}}$

$+ \frac{3\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$

$$= \frac{3\sqrt{3}+\sqrt{5}}{\sqrt{3}-\sqrt{5}} - \frac{3\sqrt{5}+\sqrt{3}}{\sqrt{3}-\sqrt{5}}$$

$$= \frac{3\sqrt{3}+\sqrt{5}-3\sqrt{5}-\sqrt{3}}{\sqrt{3}-\sqrt{5}}$$

$$= \frac{2\sqrt{3}-2\sqrt{5}}{\sqrt{3}-\sqrt{5}} = \frac{2[\sqrt{3}-\sqrt{5}]}{\sqrt{3}-\sqrt{5}} = 2$$

65. (2) Base of the triangle = a

According to question,

$$a + \frac{5}{6}a + \frac{5}{6}a = 32$$

or, $\frac{6a+10a}{6} = 32$

or, $16a = 32 \times 6$

$\therefore \quad a = 12$

The area of the isosceles triangle

$$= \frac{1}{4}b\sqrt{4a^2-b^2}$$

$$= \frac{1}{4} \times 12\sqrt{4\left(\frac{5}{6}\times 12\right)^2 - (12)^2}$$

$$= 3\sqrt{4\times 100 - 144} = 3\sqrt{400-144}$$

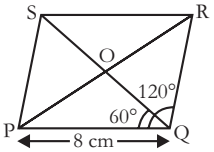
$$= 3\sqrt{256} = 3 \times 16 = 48 \text{ cm}^2$$

66. (3) $\angle PQR = 120°$

$$\angle PQS = \frac{\angle PQR}{2} = \frac{120°}{2}$$

$$\angle PQS = 60°$$

In ΔPQO,



$$\cos 60° = \frac{OQ}{PQ}$$

$$\frac{1}{2} = \frac{OQ}{8}$$

$$OQ = 4 \text{ cm}$$

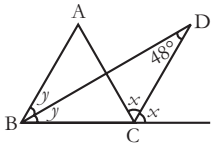
$$QS = 2 \times 4 = 8 \text{ cm}$$

67. (2) In ΔBDC,

$$48 + y + 180 - x = 180$$

$$x - y = 48$$

In ΔABC,



$$\angle A + 2y + 180 - 2x = 180$$

$$\angle A + 2(y - x) = 0$$

$$\angle A = 2(x - y)$$

$$\angle A = 2 \times 48 = 96°$$

68. (3) $\angle DCE = 45°$

$$CD = 10\sqrt{2} \text{ cm}$$

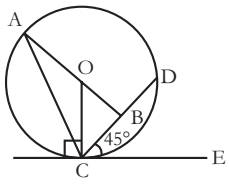
$$CB = \frac{10\sqrt{2}}{2} = 5\sqrt{2} \text{ cm}$$

$\{\because CB = DB\}$

$\because \quad \angle OCE = 90°$

$\therefore \quad OCD = 90° - 45° = 45°$

In ΔOCB,



$$\cos 45° = \frac{BC}{OC} = \frac{5\sqrt{2}}{OC}$$

$$\frac{1}{\sqrt{2}} = \frac{5\sqrt{2}}{OC}$$

$$\Rightarrow \quad OC = 10 \text{ cm}$$

$$\tan 45° = \frac{OB}{CB} = \frac{OB}{5\sqrt{2}}$$

$$1 = \frac{OB}{5\sqrt{2}}$$

$$OB = 5\sqrt{2} \text{ cm}$$

In ΔACB,

$$(AC)^2 = (AB)^2 + (BC)^2$$

$$(AC)^2 = (10 + 5\sqrt{2})^2 + (5\sqrt{2})^2$$

$$(AC)^2 = 100 + 50 + 100\sqrt{2} + 50$$

$$= 200 + 100 \times 141$$

$$(AC)^2 = 200 + 141 = 341$$

$$AC = 18.5 \text{ cm}$$

69. (1) $\frac{\sin 2A}{1+\cos 2A} = \frac{2\sin A\cos A}{1+2\cos^2 A - 1}$

$$= \frac{2\sin A\cos A}{2\cos^2 A} = \frac{\sin A}{\cos A} = \tan A$$

70. (1) $\left(\frac{\sec A}{\cot A + \tan A}\right) = \left[\frac{\frac{1}{\cos A}}{\frac{\cos A}{\sin A} + \frac{\sin A}{\cos A}}\right]^2$

$$= \left[\frac{1}{\cos A} \times \frac{\sin A\cos A}{\cos^2 A + \sin^2 A}\right]^2$$

$$= \left[\frac{\sin A}{1}\right]^2 = \sin^2 A = 1 - \cos^2 A$$

71. (3) $1 + \tan A \tan\frac{A}{2}$

$$= 1 + \frac{\sin A}{\cos A} \times \frac{\sin\frac{A}{2}}{\cos\frac{A}{2}}$$

$$= \frac{\cos A.\cos\frac{A}{2} + \sin A.\sin\frac{A}{2}}{\cos A.\cos\frac{A}{2}}$$

$$= \frac{\left(1 - 2\sin^2\frac{A}{2}\right)\cos\frac{A}{2} + 2\sin\frac{A}{2}\cos\frac{A}{2}\sin\frac{A}{2}}{\cos A.\cos\frac{A}{2}}$$

$$= \frac{\cos\frac{A}{2} - 2\sin^2\frac{A}{2}.\cos\frac{A}{2} + 2\sin^2\frac{A}{2}.\cos\frac{A}{2}}{\cos A.\cos\frac{A}{2}}$$

$$= \frac{\cos\frac{A}{2}}{\cos A.\cos\frac{A}{2}} = \frac{1}{\cos A} = \sec A$$

72. (2) No. of shoes of Reebok brand

$$= 1200 \times \frac{23}{100} = 276$$

73. (1) Required difference

$$= 1200 \times \frac{(21-13)}{100}$$

$$= 12 \times 8 = 96$$

74. (3) Difference between Reebok and Nike

$$= 1200 \times \frac{(23-18)}{100}$$

$$= 60$$

Difference between Vans and Nike

$$= 1200 \times \frac{(18-13)}{100}$$

$$= 60$$

75. (2) Required percentage

$$= \frac{21-18}{18} \times 100$$

$$= 16.66\%$$

PART-IV (ENGLISH LANGUAGE)

76. (2) In the given sentence, part (2) has an error. To correct the sentence use 'than' in place of 'when'.

77. (1) In the given sentence, part (1) has an error. To correct the sentence, use 'you obey' in place of 'you don't obey'.

78. (4) The idea of fourteen kilometers is one whole, long distance. So, we use 'is' in the blank.

79. (3) **Reflect (Verb):** represent in an appropriate way.

80. (3) **Frivolous Puerile (Adjective):** glib; light-hearted and sportive.

Sentence → Superficial frivolous ribbons and lacy frills.

81. (4) **Petrify/Harden (Verb):** ossify

Sentence → Fossilize the petrified remains of prehistoric animals.

82. (3) Opposite of Gregarious is

Introvert (Noun): a shy, reticent person.

Sentence → He is an introvert.

83. (3) Opposite of Tremulous is

Stable (Adjective): solid; firm; steady.

Sentence → These dinghies are stable.

84. (2) The beginning and the end

Sentence → "I am the Alpha and the Omega" said the lord.

85. (3) **To Surrender**

Sentence → The enemy threw up the sponge when our army surrounded him from all sides.

86. (2) For improvement of sentence use 'few' in place of 'a few'.

87. (3) For improvement of sentence use 'to' in place of 'about'.

88. (1) Best substitute of the sentence is

Elegy (Noun): a mournful poem.

Sentence → The book is an elegy for the author's grandfather James.

89. (4) Best substitute of the sentence is

Somnambulist (Noun): an abnormal condition of sleep in which walking are performed.

90. (1) Correctly spelt word → guarantee.

91. (1) Correctly spelt word → etiquette.

92. (3) Logical order of the sentences to form a coherent paragraph → RQSP.

93. (2) Logical order of the sentences to form a coherent paragraph → QPRS.

94. (1) A beautiful song was being sung by Ram for his mother. It is active voice of past continuous tense.

95. (2) "Don't go to school tomorrow" Priya said to me.

It is indirect speech of an imperative sentence.

96. (1) Best option for blank →

Affect (Verb): make a difference to.

97. (1) Best option for blank → Higher

98. (4) Best option for blank →

Optimal (Adjective): Optimum; best or most favourable.

99. (3) Best option for blank →

Produce (Verb): create or form a process.

100. (2) Best option for blank →

Accompany (Verb): be present or occur at the same time as something else.

❑❑❑

18

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 06 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Yellow : Lemon : : Purple : ?
(1) Apple (2) Brinjal
(3) Mango (4) Onion

2. UK : RQP : : TUV : ?
(1) CDE (2) YZZ
(3) GFE (4) DCB

3. 95 : 105 : : 89 : ?
(1) 109 (2) 809
(3) 111 (4) 98

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Sister (2) Nephew
(3) Daughter (4) Aunt

5. (1) MLN (2) FED
(3) JIH (4) RQP

6. (1) 1600 (2) 2500
(3) 3600 (4) 4000

Directions (7–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

7. Smart, Aspire, Castle, Abysmal, Accost?
(1) Shop (2) Class
(3) Showman (4) Duties

8. BCD, EFG, IJK, NOP, TUV, ?
(1) YZZ (2) ZZB
(3) BCD (4) ABC

9. 0.05, –0.1, ?, – 0.4, 0.8
(1) – 0.2 (2) 0.25
(3) – 0.25 (4) 0.2

10. Mishti's birthday is on Thursday 27th April. On what day of the week will be Aradhya's birthday in the same year, if Aradhya was born on 20th October?
(1) Friday (2) Wednesday
(3) Saturday (4) Thursday

11. The weights of 4 boxes are 80, 60, 90 and 70 kg. Which of the following cannot be the total weight, in kilogram, of any combination of these boxes?
(1) 300 (2) 230
(3) 220 (4) 290

12. From the given words, select the word which cannot be formed using the letters of the given word.
SANCTION
(1) STOIC (2) TACOS
(3) STONE (4) SONIC

13. If CHANTED is coded as ZEXKQBA, then how will MAY be coded as?
(1) XIG (2) JXV
(3) OBI (4) XAV

14. In a certain code language,'+' represents '×', '–' represents '+', '×' represents '÷' and '÷' represents '–'. What is the answer to the following question?
$12 \times 6 \div 5 + 4 = ?$
(1) 8 (2) – 18
(3) 42 (4) 18

15. If 75$26 = 4, 69$53 = 7, then what is the value of 82$46 = ?
(1) 62 (2) 56
(3) 0 (4) 91

16. A woman in a shopping complex walks 150 m East, then she turns North and walks 180 m, then she turns West and walks 70 m, then she turns to her left and walks 180 m. Where is she now with reference to her starting position?
(1) 80 m West (2) 220 m East
(3) 80 m East (4) 220 m West

17. In the question two statements are given, followed by two conclusions, I and II. You have to consider the statements to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given conclusions, if any, follows from the given statements?

Statements:
Some wild are carnivores.
All wild are lions.

Conclusions:
I. All carnivores are lions.
II. Some lions are carnivores.
(1) Only conclusion I follows
(2) Only conclusions II follows
(3) Both conclusions I and II follow
(4) Neither I nor II follows

18. In a row, there are 6 boys between A and B and A being the first boy in row. There are 3 boys between B and C. If there are 12 boys after C, then how many minimum boys are there in a row?
(1) 20 (2) 16
(3) 24 (4) 18

19. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.
PNR, RQV, TTZ, ?, XZH

(1) VWB (2) UXC
(3) VWD (4) UXE

20. Six year ago Parvez's age was same as the present age of Manish. If the present age of Parvez is one-fourth more than that of Manish's present age, then in how many years will Parvez's age become double of Manish's present age?
(1) 6 years (2) 12 years
(3) 15 years (4) 18 years

21. In the following question, select the word which cannot be formed using the letters of the given word.
INFORMATION
(1) NATION (2) INFRA
(3) RATION (4) MATER

22. If 8 θ 12 δ 6 = 60 and 13 θ 15 δ 11 = 74, then 18 θ 21 δ 15 = ?
(1) 161 (2) 139
(3) 153 (4) 147

23. In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
a _ c a a b _ a _ b c a a b _ a _ b _ a
(1) cbacba (2) bcacac
(3) acbaca (4) bbacaa

24. In the following question, select the missing number from the given series.
9, 10, 13, 22, 49, ?
(1) 117 (2) 126
(3) 115 (4) 130

25. If 14 (16) 18 and 33 (64) 25, then what is the value of 'A' in 25 (49) A?
(1) 32 (2) 18
(3) 24 (4) 32 or 18

PART-II
(GENERAL AWARENESS)

26. The .... curve represents the demand of all consumers in the market taken together at different levels of the price of the goods.
(1) monotonic
(2) indifferent
(3) market demand
(4) diminishing

27. The market structure called monopoly exists where there is exactly ..... seller is any market.
(1) One (2) Two
(3) Five (4) Ten

28. In which year was Communist Party of India - Marxist (CPI-M) founded?
(1) 1885 (2) 1980
(3) 1984 (4) 1964

29. Which Fundamental Right in the Indian Constitution prohibits trafficking, forced labour and children working under 14 years of age?
(1) Right to Equality
(2) Right to Freedom
(3) Right against Exploitation
(4) Right to Freedom of Religion

30. In 1528, ... defeated the Rajputs at Chanderi.
(1) Humayun (2) Akbar
(3) Jahangir (4) Babur

31. Which of the following was a leader of the Hindustan Socialist Republican Army founded in 1928?
(1) Khudiram Bose
(2) Bhagat Singh
(3) Chandra Shekhar Azad
(4) Subhash Chandra Bose

32. Land covers about ..... of the earth's surface.
(1) 20% (2) 30%
(3) 35% (4) 40%

33. The uppermost layer over the earth's surface is called the ..... .
(1) Mantle (2) Core
(3) Crust (4) Exosphere

34. The scientific name of human being is:
(1) Homo Nigrum
(2) Melongena Sapiens
(3) Homo Sapiens
(4) Tigris Solanum

35. In a majority of flowering plants, out of the four megaspores, what is the ratio of functional and degenerate megaspores?
(1) 2 : 2 (2) 1 : 3
(3) 3 : 1 (4) 4 : 0

36. The body of all complex animals consists of only ..... basic types of tissue(s).
(1) 4000 (2) 400
(3) 40 (4) 4

37. Meter in a vehicle that calculates distance covered by the vehicle is called ..... .
(1) Speedometer (2) Odometer
(3) Thermometer (4) Kilometre

38. What is the SI unit of pressure?
(1) Newton (2) Weber
(3) Pascal (4) Henry

39. ..... Disk Encryption is a technology (hardware or software) where data is encrypted before storage.
(1) Half (2) Whole
(3) Double (4) Triple

40. Oxide of which of the following will turn red litmus blue?
(1) Magnesium (2) Phosphorus
(3) Sulphur (4) Carbon

41. Which of the following are highly compressible?
(1) Solid
(2) Liquid
(3) Gas
(4) Solid and Liquid

42. ..... gases absorb long wave (infrared) radiation from the earth and emit it again towards the earth.
(1) Methane
(2) Greenhouse
(3) Carbon dioxide
(4) Ozone

43. In April 2017, Chief Minister Amarinder Singh banned inclusion of names of Ministers and MLA's on Plaques and Foundation Stones in which state?
(1) Maharashtra
(2) Punjab
(3) Himachal Pradesh
(4) Uttar Pradesh

44. Who invented bluetooth?
(1) Kirkpatrick Macmillan
(2) Benjamin Franklin
(3) Dr. Jaap Haartsen
(4) Charles Babbage

45. Who was the winner of 2015 Men's Cricket World Cup?
(1) India (2) West Indies
(3) Pakistan (4) Australia

46. Rukmini Devi Arundale was a reputed dancer and choreographer in which form of dancing?
(1) Opera (2) Lavani
(3) Bharatnatyam (4) Dandiya

47. Who won the 2017 Pulitzer Prize for Drama 'Sweat'?
(1) Lynn Nottage
(2) Hisham Matar
(3) Heather Ann Thompson
(4) Colson Whitehead

48. A. The author of the novel 'The Corrections' is Jonathan Franzen.
B. The author of the novel 'A Visit from the Goon Squad' is Edward P. Jones.
C. The author of the novel 'Forty Thieves' is Thomas Perry.
Which of the statements given above are correct?
(1) A and B (2) B and C
(3) A and C (4) A, B and C

49. As per World Health Organization, a pilot program testing the first ever malaria vaccine will begin in ..... in the year 2018.
(1) India
(2) Italy
(3) United Kingdom
(4) Africa

50. Bhutan does not share its border with which Indian state?
(1) West Bengal
(2) Sikkim
(3) Meghalaya
(4) Arunachal Pradesh

PART-III
(QUANTITATIVE APTITUDE)

51. What is the quotient when 7251 is divided by 66?
(1) 110 (2) 109
(3) 111 (4) 112

52. Asif is twice as good as workman as Bashir and together they finish a piece of work in 30 days. In how many days will Asif alone finish the work?
(1) 90 days (2) 45 days
(3) 60 days (4) 75 days

53. What is the area (in cm^2) of a rectangle if its diagonal is 25 cm and one of its sides is 24 cm?
(1) 186 cm^2 (2) 144 cm^2
(3) 132 cm^2 (4) 168 cm^2

54. A shopkeeper marks up his wares by 60% and offers 25% discount. What will be the selling price (in ₹) if the cost price is ₹ 1,600/-?
(1) ₹ 1,920/- (2) ₹ 2,000/-
(3) ₹ 2,120/- (4) ₹ 2,200/-

55. What number should be added to each of the numbers 55, 100, 65 and 116, so that the resulting numbers are in continued proportion?
(1) 20 (2) 10
(3) 5 (4) 15

56. A batsman makes a score of 111 runs in the 10th match and thus increases his average runs per match by 5. What will be his average after the 10th match?
(1) 66% (2) 61%
(3) 62% (4) 64%

57. A vendor buys 6 bananas for ₹ 25\- and sells them at 3 for ₹ 20\-. What is his profit percentage?
(1) 50% (2) 40%
(3) 60% (4) 30%

58. Two labourers A and B are paid a total of ₹ 650 per day. If A is paid 160% of what is paid to B, how much (in ₹) is B paid?
(1) ₹ 250/- (2) ₹ 400/-
(3) ₹ 350/- (4) ₹ 450/-

59. A man travelled a distance of 60 km in 7 hours. He travelled partly on foot @ 6 km/h and partly on bicycle @ 12 km/h. What is the distance (in km) travelled on foot?
(1) 15 km (2) 9 km
(3) 48 km (4) 24 km

60. The compound interest earned in two years at 12% per annum is ₹ 10,176/-. What is the sum (in ₹) invested?
(1) ₹ 50,000/- (2) ₹ 60,000/-
(3) ₹ 40,000/- (4) ₹ 80,000/-

61. If $\frac{\left[2\left(\frac{4x}{5}-\frac{3}{4}\right)\right]}{3-\frac{5}{3}} = -\frac{1}{6}$, then the value of x is:
(1) $\frac{4}{15}$ (2) $-\frac{15}{4}$
(3) $-\frac{4}{15}$ (4) $\frac{15}{4}$

62. If $a^3 + b^3 = 35$ and $ab = 6$, then what is the value of $a + b$?
(1) 5 (2) 8
(3) 2 (4) –8

63. Sum of a fraction and thrice of its reciprocal is $\frac{73}{20}$. What is the fraction?
(1) $\frac{4}{5}$ (2) $\frac{9}{4}$
(3) $\frac{4}{9}$ (4) $\frac{5}{4}$

64. What is the sum of the first 11 terms of an arithmetic progression if the 4th term is 11 and the 7th term is – 4?
(1) –75 (2) 55
(3) 11 (4) 100

65. What is the reflection of the point (–1, 3) in the line $x = -4$?
(1) (–7, –3) (2) (–7, 3)
(3) (7, –3) (4) (7, 3)

66. The co-ordinates of the centroid of a ΔABC are (1, –4). What are the co-ordinates of vertex C if co-ordinates of A and B are (3, –4) and (0, 5) respectively?
(1) (0, 13) (2) (0, 5)
(3) (0, –5) (4) (0, –13)

67. $ax + 5y = 8$ has slope of $-\frac{4}{3}$. What is the value of a?
(1) $\frac{20}{3}$ (2) $\frac{3}{20}$
(3) $-\frac{20}{3}$ (4) $-\frac{3}{20}$

68. D and E are points on side AB and AC of ΔABC. DE is parallel to BC. If AD : BD = 2 : 5 and area of ΔABC is 98 cm^2, what is the area (in cm^2) of quadrilateral BDEC?
(1) 90 cm^2 (2) 98 cm^2
(3) 94 cm^2 (4) 86 cm^2

69. What is the value of $\cot 45° - \left(\frac{1}{\sqrt{3}}\right) \operatorname{cosec} 60°$?
(1) $\frac{1}{\sqrt{3}}$ (2) $\frac{1}{2}$
(3) $\frac{1}{\sqrt{2}}$ (4) $\frac{1}{3}$

70. ΔDEF is right angled at E. If m $\angle F = 45°$, then what is the value of $2 \sin F \times \cot F$?
(1) $\sqrt{2}$ (2) 2
(3) $\frac{1}{\sqrt{2}}$ (4) $\frac{1}{2}$

71. If $\cot \theta = \frac{21}{20}$, then what is the value of $\operatorname{cosec} \theta$?
(1) $\frac{21}{29}$ (2) $\frac{29}{21}$
(3) $\frac{20}{29}$ (4) $\frac{29}{20}$

72. The two equal sides of an isosceles triangle is 20 cm each and the third side is 30 cm. What is the area (in cm^2) of the triangle?
(1) $50\sqrt{5}$ cm^2 (2) 100 cm^2
(3) $75\sqrt{7}$ cm^2 (4) 175 cm^2

73. PQ is the chord of a circle whose centre is O. ROS is a line segment originating from a point R on the circle that intersect PQ produced at point S such that QS = OR. If $\angle QSR = 30°$, then what is the value (in degrees) of $\angle POR$?
(1) 30° (2) 45°
(3) 60° (4) 90°

74. What is the value of $\tan 6° \tan 36° \tan 84° \tan 54° \tan 45°$?
(1) $\frac{1}{2}$ (2) $\frac{1}{\sqrt{2}}$
(3) 1 (4) $\frac{1}{3}$

75. If $(x-2)^2 + (y+3)^2 + (z-15)^2 = 0$, then what is the value of $x + y + z - 5$?
(1) 5 (2) 9
(3) 15 (4) 20

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. Chilika is the (1)/ largest brackish water (2)/ lagoon in Asia. (3)/ No error (4)

77. The climb upside (1)/ the mountains (2)/ was not easy. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. Rituals play into the ..... understandings of a society.
(1) Tactfully (2) Tacit
(3) Taciturn (4) Tacitly

79. Repetition bred a sense of ..... with the characters.
(1) Familiarity (2) Familiar
(3) Familiarly (4) Familiarise

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Incensed
(1) Ecstatic (2) Exasperated
(3) Elated (4) Blithe

81. Transcend
(1) Eclipse (2) Fizzle
(3) Abort (4) Blunder

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Incapacitate
(1) Cripple (2) Facilitate
(3) Maim (4) Immobilize

83. Sentience
(1) Disregard
(2) Appreciation
(3) Consciousness
(4) Perception

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. Ratrace
(1) Make others fight for scraps and get sadistic pleasure out of it
(2) Be an oppressive boss and treat employees like animals
(3) A way of life in which people are caught up in a fiercely competitive struggle for wealth or power
(4) Play games with the lives of other people and see them run aimlessly

85. Spin one's wheels
(1) Keep bragging about oneself
(2) Try your luck
(3) Expel much effort for little or no gain
(4) Start a long journey

Directions (86–87): Improve the **bold** part of the sentence.

86. A small makeshift stage **was construct** with a red curtain for a backdrop.
(1) are constructed
(2) was constructed
(3) were constructed
(4) No improvement

87. Take out your binoculars and **will see** the Andromeda galaxy.
(1) see
(2) saw
(3) seeing
(4) No improvement

Directions (89–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the words/sentence.

88. Take away or alter the natural qualities of
(1) Denature
(2) Unadulterated
(3) Authentic
(4) Limpid

89. Decay of organic matter producing a fetid smell.
(1) Putrefy
(2) Crisp
(3) Neoteric
(4) Virgin

Directions (90–91): In the following questions, four words are given out of which one word is correctly spelt. Select the correctly spelt word.

90. (1) Bereving
(2) Bereaving
(3) Bareaving
(4) Bareving

91. (1) Frothyiest
(2) Frotheist
(3) Frothyeist
(4) Frothiest

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. We have seen that, when
X. think of it as losing its parts and shrivelling to a point
Y. occupy any portion of space, we need not
Z. we deny that a mental image can
(1) ZXY
(2) YZX
(3) YXZ
(4) ZYX

93. Another major difference
X. seven planets around the star
Y. system is the tight packing of the
Z. in comparison with the solar
(1) ZYX
(2) ZXY
(3) YZX
(4) YXZ

94. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

The homeowners remodelled the house to help it sell.
(1) The house was remodelled by the homeowners to help it sell.
(2) The house is remodelled by the homeowners to help it sell.
(3) So that it is helped to sell the house was remodelled by the homeowners.
(4) So that it is helped to sell the house is remodelled by the homeowners.

95. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

She asked Ravi, "What is worrying you?"
(1) She asked Ravi what is worrying him.
(2) She asks Ravi what was worrying him.
(3) She asks Ravi what is worrying him.
(4) She asked Ravi what was worrying him.

Directions (96–100): A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

I had seen this road many years ago when my parents moved to Mundakotukurussi, our ancestral village. However, in those early years, I hadn't begun exploring the countryside. I stored the unknown road in my head under 'One Day I Will'. Ten years ago, when I recovered from a herniated disc, it was to discover that I had a useless left leg. Though I managed to lose the limp, I hated not being able to stride around as I used to. I needed a challenge to tell myself that I wasn't going to buckle to a creature called Sciatica. Thus the 'One Day I Will' arrived. "Where does the road by the medical shop lead to?" I asked my parents while visiting them next. "Chalavara," they said. "It's not an easy road to walk on," my father added. "There are too many ups and downs.", Chalavara was a superior grade of a village as compared to Mundakotukurussi, with a high school, a fine library, ATMs and several shops. But it also has two approach roads. The one I had chosen was a narrow back road used by the locals and that settled it for me. I needed to know for myself I could walk a road that wasn't going to be easy. And the next day, I would get up and walk that road again.

96. What is 'sciatica'?
(1) A type of animal
(2) Name of a real place
(3) Name of an imaginary place
(4) A herniated disc

97. Where did the forefathers of the writer live?
(1) Chalavara
(2) Bengaluru
(3) Mundakotukurussi
(4) Out of India

98. What disability did the writer suffer due to the herniated disc?
(1) A useless left leg
(2) Depression
(3) Loss of memory
(4) Poor visibility

99. 'One Day I Will' is the title of?
(1) A village
(2) The unknown road
(3) A tourist place
(4) A path famous with

100. What makes Chalavara better than Mundakotukurussi?
(1) It has a high school, a fine library, ATMs and several shops.
(2) It is the place where the writer's ancestors were born.
(3) It is the place where the writer went to school.
(4) It is the place where the writer would walk when he was young.

Short Answers

1. (2)	**2.** (3)	**3.** (3)	**4.** (2)	**5.** (1)	**6.** (4)	**7.** (4)	**8.** (4)	**9.** (4)	**10.** (1)
11. (4)	**12.** (3)	**13.** (2)	**14.** (2)	**15.** (3)	**16.** (3)	**17.** (2)	**18.** (3)	**19.** (3)	**20.** (4)
21. (4)	**22.** (3)	**23.** (2)	**24.** (4)	**25.** (4)	**26.** (3)	**27.** (1)	**28.** (4)	**29.** (3)	**30.** (4)
31. (3)	**32.** (2)	**33.** (3)	**34.** (3)	**35.** (2)	**36.** (4)	**37.** (2)	**38.** (3)	**39.** (2)	**40.** (1)
41. (3)	**42.** (2)	**43.** (2)	**44.** (3)	**45.** (4)	**46.** (3)	**47.** (1)	**48.** (3)	**49.** (4)	**50.** (3)
51. (2)	**52.** (2)	**53.** (4)	**54.** (1)	**55.** (1)	**56.** (1)	**57.** (3)	**58.** (1)	**59.** (4)	**60.** (3)
61. (4)	**62.** (1)	**63.** (4)	**64.** (3)	**65.** (2)	**66.** (4)	**67.** (1)	**68.** (1)	**69.** (4)	**70.** (1)
71. (4)	**72.** (3)	**73.** (4)	**74.** (3)	**75.** (2)	**76.** (4)	**77.** (1)	**78.** (2)	**79.** (1)	**80.** (2)
81. (1)	**82.** (2)	**83.** (1)	**84.** (3)	**85.** (3)	**86.** (2)	**87.** (1)	**88.** (1)	**89.** (1)	**90.** (2)
91. (4)	**92.** (4)	**93.** (1)	**94.** (1)	**95.** (4)	**96.** (4)	**97.** (3)	**98.** (1)	**99.** (2)	**100.** (1)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (2) Colour of Lemon is Yellow, in the same way colour of Brinjal is Purple.

2. (3) I $\xrightarrow{\text{Opposite}}$ R T $\xrightarrow{\text{Opposite}}$ G

J $\xrightarrow{\text{Opposite}}$ Q U $\xrightarrow{\text{Opposite}}$ F

K $\xrightarrow{\text{Opposite}}$ P V $\xrightarrow{\text{Opposite}}$ E

3. (3) 95 : 105 : : 89 : 111

(95 → 89: +6; 105 → 111: +6)

4. (2) Except Nephew, all others are female relations.

5. (1) M $\xrightarrow{-1}$ L $\xrightarrow{+2}$ N

F $\xrightarrow{-1}$ E $\xrightarrow{-1}$ D

J $\xrightarrow{-1}$ I $\xrightarrow{-1}$ H

R $\xrightarrow{-1}$ Q $\xrightarrow{-1}$ P

6. (4) Except 4000, all others are perfect square numbers.

7. (4) Smart, Aspire, Castle, Abysmal, Accost, **Duties.**

8. (4) BCD EFG IJK NOP TUV ABC

+3 +4 +5 +6 +7

9. (4) 0.05 – 0.1 0.2 – 0.4 0.8

×(–2) ×(–2) ×(–2) ×(–2)

10. (1) Total days from 27 April to 20 October.

= 3 + 31 + 30 +31 + 31 + 30 + 20

= 176

Odd days = $\frac{176}{7}$

= 25 weeks 1 day

The day of 20 October

= Thursday + 1

= Friday

11. (4) 80 + 60 + 90 + 70 = 300

80 + 60 + 90 = 230

60 + 90 + 70 = 220

∴ 290 kg weight cannot be formed by the given weight combination.

12. (3) By using the letters of given word 'SANCTION' the word 'STONE' cannot be formed because it does not have letter 'E'.

13. (2) C H A N T E D   M A Y

–3 –3 –3 –3 –3 –3 –3   –3 –3 –3

Z E X K Q B A   J X V

14. (2) ? = 12 × 6 ÷ 5 + 4

After changing code language;

? = 12 ÷ 6 – 5 × 4

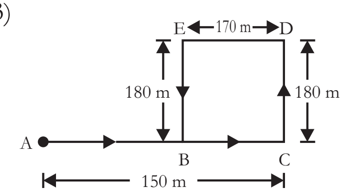
? = 2 – 20 ⇒ ? = – 18

15. (3) 75 $ 26 = (7 + 5) – (2 + 6) = 12 – 8 = 4

69 $ 53 = (6 + 9) – (5 + 3) = 15 – 8 = 7

82 $ 46 = (8 + 2) – (4 + 6) = 10 – 10 = 0

16. (3)

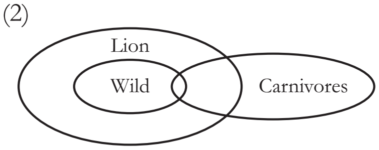


AB = 150 – 70

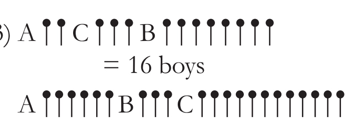
AB = 80 m

∴ Women is 80 m East far from her starting position.

17. (2)



18. (3)



= 16 boys

= 24 boys

∴ Minimum boys in the row = 16

19. (3) PNR RQV TTZ VWD XZH

+3 +3 +3 +3

+2 +2 +2 +2

+4 +4 +4 +4

20. (4) Manish's present age = x years

Parvez's present age = $x + \frac{x}{4}$

$= \frac{5x}{4}$ years

Given, $\frac{5x}{4} - 6 = x$

$\Rightarrow \frac{5x - 4x}{4} = 6$

$\Rightarrow x = 24$

After t years, Parvez's age will become double of Manish's present age.

$\frac{5}{4} \times 24 + t = 2 \times 24$

$\Rightarrow 30 + t = 48$

$\Rightarrow t = 18$ years

21. (4) The word 'MATER' cannot be formed using the letters of the given word because the word 'INFORMATION' does not have the letter 'E'.

22. (3) $8\ \theta\ 12\ \delta\ 6 = 8 \times 12 - (6)^2$

$= 96 - 36$

$= 60$

$13\ \theta\ 15\ \delta\ 11 = 13 \times 15 - (11)^2$

$= 195 - 121$

$= 74$

$\therefore\ 18\ \theta\ 21\ \delta\ 15 = 18 \times 21 - (15)^2$

$= 378 - 225$

$= \textcircled{153}$

23. (2) a b c a / a b c a / a b c a / a b c a / a b c a

24. (4) 9 10 13 22 49 130

+1 +3 +9 +27 +81

×3 ×3 ×3 ×3

25. (4) $(18 - 14)^2 = (4)^4 = 16$

$(33 - 25)^2 = (8)^2 = 64$

$\therefore\ (25 - A)^2 = 49;\ (A - 25)^2 = 49$

$25 - A = 7\ ;\ A - 25 = 7$

$A = 18\ ;\ A = 32$

PART-II (GENERAL AWARENESS)

26. (3) The market demand curve is a graph that shows the quantity of goods that consumers are willing and able to purchase a certain price.

27. (1) A market structure characterised by a single seller, selling a unique product in the market. In a monopoly market, the seller faces no competition, as he is the sole seller of goods with no close substitute.

28. (4) The Communist Party of India (Marxist) is a communist party in India. The party emerged from a split from the Communist Party of India in 1964. CPI-M was formed on 7 November 1964.

29. (3) The right against exploitation prohibits all forms of forced labour, child labour and trafficking of human beings.

30. (4) The Battle of Chanderi (1528) took place in the aftermath of the Battle of Khanwa in which the Mughal Emperor Babur had defeated a confederacy of Rajputs and Afghans which was headed by Rana Sanga of Mewar.

31. (3) Hindustan Socialist Republican Association (HSRA) was a revolutionary organisation, also known later (in 1928) as Hindustan Socialist Republican Army established in 1924 at Feroz Shah Kotla in Delhi by Sachindra Nath Sanyal, Chandrasekhar Azad, Bhagat Singh, Sukhdev Thapar and others were members of this association.

32. (2) Water makes up about 71% of the Earth's surface, while the other 29% consists of continents and islands.

33. (3) The uppermost layer over the earth's surface is called the Crust. It is very thin in comparison to the other three layers. The crust is only about 8 km thick under the oceans and about 32 km thick under the continents.

34. (3) Homo sapiens "*Wise person*" in Latin is the binomial nomenclature (also known as the scientific name) for the human species.

35. (2) A megaspore mother cell, or megasporocyte, is a diploid cell in plants in which meiosis will occur, resulting in the production of four haploid megaspores. At least one of the spores develop into haploid female gametophytes thus making the ratio of functional and degenerate megaspores is 1:3.

36. (4) The term tissue is used to describe a group of cells found together in the body. There are four types of tissues in complex animals, and they are connective, muscle, nervous and epithelial.

37. (2) An odometer or odograph is an instrument used for measuring the distance travelled by a vehicle, such as a bicycle or car.

38. (3) The SI unit of pressure is the pascal (Pa), which is equal to one Newton per meter squared (N/m^2).

39. (2) Full-disk Encryption (FDE) is the encryption of all data on a disk drive, including the program that encrypts the bootable OS partition. It is performed by disk encryption software or hardware that is installed on the drive during manufacturing or via an additional software driver.

40. (1) Magnesium oxide is mild base therefore it turns red litmus blue while oxides of Sulphur, Phosphorus and Carbon are acidic in nature so they did not affect red litmus but turn blue litmus into red.

41. (3) In a gas, the particles are very far away from each other, so there is a lot of space for the particles to be compressed down. Thus, gases are highly compressible and is very helpful when transporting gases in containers.

42. (2) A greenhouse gas is a gas that absorbs and emits radiant energy within the thermal infrared range. Greenhouse gases cause the greenhouse effect. The primary greenhouse gases in Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide and ozone.

43. (2) Punjab Chief Minister Captain Amarinder Singh on 15 April 2017 prohibited the inclusion of names of any government functionaries, including Ministers and MLAs, on foundation stones and inaugural plaques.

44. (3) Dr. Jaap Haartsen, who invented Bluetooth while working at Ericsson in the 1990s.

45. (4) The final of the Cricket World Cup 2015 took place on 29 March 2015 at the Melbourne Cricket Ground in Melbourne, Australia. It was played between the tournament's two co-hosts, New Zealand and Australia. Australia won by 7 wickets and it is fifth World Cup win.

46. (3) Rukmini Devi Arundale was an Indian theosophist, dancer and choreographer of the Indian classical dance form of Bharatanatyam, and an activist for animal rights and welfare. She is the first ever woman in Indian history to be nominated as the Rajya Sabha member.

47. (1) Lynn Nottage is an American playwright whose work often deals with the lives of marginalised people. She is a professor of Playwriting at Columbia University. She was the first woman to have won the Pulitzer Prize for Drama twice; the first in 2009 for Ruined, and the second in 2017 for Sweat.

48. (3) 'The Corrections' is a 2001 novel by American author Jonathan Franzen.

'A Visit from the Goon Squad' is a 2011 Pulitzer Prize-winning work of fiction by American author Jennifer Egan.

Thomas Perry is the bestselling author of over twenty novels, including the critically acclaimed Jane Whitefield series, Forty Thieves, and The Butcher's Boy, which won the Edgar Award.

49. (4) In the year 2018, the world's first malaria vaccine tested on people from three African countries—Ghana, Kenya and Malawi.

50. (3) Bhutan is located on the southern slopes of the eastern Himalayas, landlocked between the Tibet Autonomous Region to the north and the Indian states of Sikkim, West Bengal, Assam and Arunachal Pradesh to the west and south.

PART-III
(QUANTITATIVE APTITUDE)

51. (2) $66\overline{)7251}\,(109$

$\underline{66}$

651

$\underline{594}$

57

$\therefore$ Required quotient = 109.

52. (2) Asif can finish the work = x days

Bashir can finish the work = $2x$ days

According to question,

$$\frac{1}{x}+\frac{1}{2x}=\frac{1}{30}$$

$$\Rightarrow \quad \frac{3}{2x}=\frac{1}{30}$$

$$\therefore \quad x = 45 \text{ days}$$

53. (4) Second side of the rectangle = a

$$\sqrt{a^2+(24)^2}=25$$

or, $a^2 + 576 = 625$

or, $a^2 = 49$

$\therefore$ $a = 7$

Area of rectangle $= 7 \times 24$

$= 168 \text{ cm}^2$

54. (1) Cost Price = ₹ 1,600

$$\text{Marked Price} = 1600 \times \frac{160}{100}$$

= ₹ 2,560

$$\text{Selling Price} = 2560 \times \frac{75}{100}$$

= ₹ 1,920

55. (1) Required number

$$= \frac{bc-ad}{(a+d)-(b+c)}$$

$$= \frac{100\times 65-55\times 116}{(55+116)-(100+65)}$$

$$= \frac{6500-6380}{171-65}=\frac{120}{6}=20$$

56. (1) Average of the batsman after 10^{th} match = x

According to question,

$9 \times (x-5) + 111 = 10x$

or, $9x - 45 + 111 = 10x$

$\therefore$ $x = 66$

57. (3) Profit percentage

$$= \frac{6\times 20-25\times 3}{25\times 3}\times 100$$

$$= \frac{(120-75)}{3}\times 4=\frac{45}{3}\times 4$$

$= 15 \times 4 = 60\%$

58. (1) B's share = ₹ x

According to question,

$$x+\frac{x\times 160}{100}=650$$

or, $$\frac{5x+8x}{5}=650$$

or, $13x = 650 \times 5$

$\therefore$ $$x=\frac{650\times 5}{13}$$

= ₹ 250

59. (4) Distance travelled on foot = d km

According to question,

$$\frac{d}{6}+\frac{60-d}{12}=7$$

or, $$\frac{2d+60-d}{12}=7$$

$\therefore$ $d = 84 - 60 = 24$ km

60. (3) Sum invested = ₹ P

$$P\left[\left(1+\frac{12}{100}\right)^2-1\right]=10{,}176$$

or, $$P\left[\left(\frac{28}{25}\right)^2-1\right]=10{,}176$$

or, $$P\left[\frac{784-625}{625}\right]=10{,}176$$

or, $P(159) = 10{,}176 \times 625$

or, $P = 64 \times 625$

$\therefore$ P = ₹ 40,000

61. (4) $$2\left[\frac{4x}{5}-\frac{3}{4}\right]\times\frac{1}{3}-\frac{5}{3}=\frac{-1}{6}$$

or, $$\left[\frac{8x}{5}-\frac{3}{2}\right]\times\frac{1}{3}=\frac{5}{3}-\frac{1}{6}$$

or, $$\frac{8x}{15}-\frac{1}{2}=\frac{10-1}{6}$$

or, $$\frac{8x}{15}=\frac{9}{6}+\frac{1}{2}$$

$\Rightarrow$ $$\frac{8x}{15}=\frac{9+3}{6}$$

or, $$x=\frac{12}{6}\times\frac{15}{8}$$

$\therefore$ $$x=\frac{15}{4}$$

62. (1) $a^3 + b^3 = 35$; $ab = 6$

$a + b = x$

$(a+b)^3 = a^3 + b^3 + 3ab(a+b)$

or, $x^3 = 35 + 3 \times 6x$

or, $x^3 - 18x = 35$

or, $x(x^2 - 18) = 5 \times 7$

$\Rightarrow$ $x = 5$

$\therefore$ $a + b = 5$

63. (4) Fraction = x

According to question,

$$x + \frac{3}{x} = \frac{73}{20}$$

$$\Rightarrow \quad \frac{x^2 + 3}{x} = \frac{73}{20}$$

or, $20x^2 + 60 = 73x$

or, $20x^2 - 73 + 60 = 0$

or, $20x^2 - 48x - 25x + 60 = 0$

or, $4 \times (5x - 12) - 5(5x - 12) = 0$

or, $(4x - 5)(5x - 12) = 0$

$\therefore$ $x = \frac{5}{4}$

64. (3) $T_n = a + (n - 1)d$

$11 = a + (4 - 1)d$

$11 = a + 3d$ ... (i)

$-4 = a + (7 - 1)d$

$-4 = a + 6d$ ... (ii)

On solving equations (i) and (ii),

$a = 26, \quad d = -5$

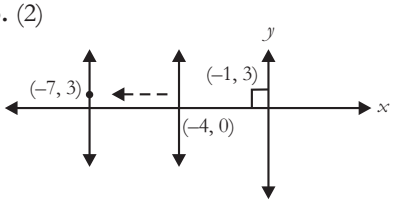
$S_n = \frac{n}{2}[2a + (n - 1)d]$

$S_{11} = \frac{11}{2}[2 \times 26 + (11 - 1)(-5)]$

$S_{11} = \frac{11}{2}[52 - 50) = \frac{11}{2} \times 2$

$\therefore$ $S_{11} = 11$

65. (2)



From the point (–4, 0) *i.e.,* $x = -4$ the coordinates are 3 points distant from it *i.e.,* (–4 + 3, 3) = (–1, 3)

From the point (–4, 0), the reflection point is 3 points distant in opposite direction *i.e.,* (–4 – 3, 3) = (–7, 3).

66. (4) Co-ordinates of C = (x, y)

According to question,

$$\left(\frac{3 + 0 + x}{3}, \frac{-4 + 5 + y}{3}\right) = (1, -4)$$

$\therefore$ $\frac{3 + x}{3} = 1, \frac{1 + y}{3} = -4$

$3 + x = 3, \frac{1 + y}{3} = -4$

$3 + x = 3, 1 + y = -12$

$x = 0, \quad y = -13$

The Co-ordinates of C = (0, –13)

67. (1) $ax + 5y = 8$

$\Rightarrow$ $5y = -ax + 8$

$y = \frac{-a}{5}x + \frac{8}{5}$

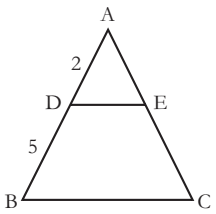
$\Rightarrow$ $y = mx + c$

$\therefore$ $m = \frac{-a}{5} \Rightarrow \frac{-a}{5} = \frac{-4}{3}$

$\Rightarrow$ $a = \frac{20}{3}$

68. (1) $\because \Delta ADE \sim \Delta ABC$

$\therefore$ $\frac{\Delta ADE}{\Delta ABC} = \left[\frac{AD}{AB}\right]^2$



$\frac{\Delta ADC}{98} = \left[\frac{2}{7}\right]^2 = \frac{4}{49}$

$\Delta ADC = 8$

Area of quadrilateral BDEC

$= \Delta ABC - \Delta ADE$

$= 98 - 8 = 90 \text{ cm}^2$

69. (4) $\cot 45° - \frac{1}{\sqrt{3}} \text{cosec } 60°$

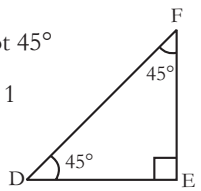
$= 1 - \frac{1}{\sqrt{3}} \times \frac{2}{\sqrt{3}} = 1 - \frac{2}{3} = \frac{1}{3}$

70. (1) 2 sin F cot F

$= 2 \sin 45° \cot 45°$

$= 2 \times \frac{1}{\sqrt{2}} \times 1$

$= \sqrt{2}$



71. (4) $\cot \theta = \frac{21}{20}$

$(AB)^2 = (21)^2 + (20)^2$

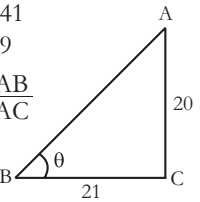
$= 441 + 400$

$(AB)^2 = 841$

$AB = 29$

$\text{cosec } \theta = \frac{AB}{AC}$

$= \frac{29}{20}$



72. (3) Area of isosceles triangle

$= \frac{1}{4}b\sqrt{4a^2 - b^2}$

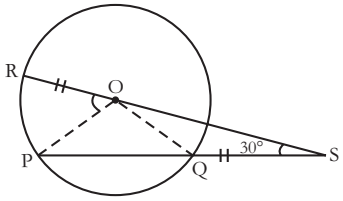
$= \frac{1}{4} \times 30\sqrt{4 \times (20)^2 - (30)^2}$

$= \frac{15}{2}\sqrt{1600 - 900}$

$= \frac{15}{2}\sqrt{700} = \frac{15 \times 10\sqrt{7}}{2}$

$= 75\sqrt{7} \text{ cm}^2$

73. (4)



Given,

QS = OR ... (i)

OQ = OR (radii of a circle) ... (ii)

From (i) & (ii),

OQ = QS

Now is ΔOQS,

$\therefore$ $\angle QSR = \angle QOS = 30°$

(angles opposite to equal sides are equal)

$\therefore$ $\angle OQS = 180° - (30° + 30°)$

$= 180° - 60° = 120°$

Now in ΔPOQ,

$\angle PQO = 180° - \angle OQS$

$= 180° - 120° = 60°$

$\therefore$ $\angle QPO = \angle PQO$

$= 60°$

(angles opposite to equal radii of a circle)

$\therefore$ $\angle POQ = 180° - \angle QPO - \angle PQO$

$= 180° - 60° - 60°$

$= 60°$

Now, $\angle POR = 180° - \angle POQ - \angle QOS = 180° - 60° - 30° = 90°$

74. (3) $\tan 6° \cdot \tan 36° \cdot \tan 84° \cdot \tan 54° \cdot \tan 45°$

$= \tan(90° - 84°) \cdot \tan 84° \tan(90° - 54°) \cdot \tan 54° \cdot 1$

$= \cot 84° \cdot \tan 84° \cdot \cot 54° \cdot \tan 54°$

$= 1 \times 1 = 1$

75. (2) $(x - 2)^2 + (y + 3)^2 + (z - 15)^2 = 0$

$x - 2 = 0, \; y + 3 = 0, \; z - 15 = 0$

$x = 2, \quad y = -3, \quad z = 15$

$x + y + z - 5 = 2 - 3 + 15 - 5$

$= 14 - 5 = 9$

PART-IV (ENGLISH LANGUAGE)

76. (4) The sentence is correct.

77. (1) Use 'to' in place of 'upside' as climb itself means act of moving upward.

78. (2) Correct answer should be objective tacit (modifier) for the noun.

79. (1) A noun to add with 'sense of' the correct answer should be noun 'familiarity' to make the sentence meaningful.

80. (2) **Incensed** – very angry; enraged

Exasperated – irritate intensely; infurite.

81. (1) **Transcend** – be or go beyond the range or limits of

Eclipse – a loss of significance or power in relation to another person or thing.

82. (2) **Incapacitate** – prevent from functioning in a normal way.

Facilitate – make (an action or process) easy or easier.

83. (1) **Sentence** – Capacity to fuel, perceive or experience subjectively.

Disregard – The action or state of paying no attention to something.

84. (3) **Ratrace** – A fierce struggle for success usually in your career or in business.

85. (3) **Spin One's Wheels** – To neither progress nor regress, but remain in a friend, neutral position.

86. (2) Replace 'was construct' by 'was constructed'.

87. (1) Delete 'will' before 'see'.

88. (1) Denature – Take away or alter the natural qualities of

89. (1) Putrefy – Is to begin stinking, usually when rotting or decomposing.

90. (2) Correct spelling – Bereaving.

91. (4) Correct spelling – Frothiest.

92. (4) We have seen that, when we deny that a mental image can occupy any portion of space, we need not think of it as losing its parts and shrivelling to a point.

93. (1) Another major difference in comparison with the solar system is the tight packing of the seven planets around the star.

94. (1) The house was remodelled by the home owners to help it sell.

95. (4) She asked Ravi what was worrying him.

96. (4) Sciatica is a herniated disc.

97. (3) Writer's parents moved to Mundakotukurussi, his ancestral village.

98. (1) A useless left leg.

99. (2) 'One Day I Will' is the title of the unknown road.

100. (1) Chalavara village is better than Mundakotukurussi village because it has a high school, a fine library, ATMs and several shops.

❑❑❑

19

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 05 August, 2017 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word/letter/number from the given alternatives.

1. Heart : Organ : : ? : ?
(1) Bones : Calcium
(2) Eyes : Organ
(3) Leg : Feet
(4) Ear : Sense

2. BPTW : CQUX : : CHNS : ?
(1) DIST (2) DIOT
(3) BGOT (4) DSTO

3. 48 : 63 : : 80 : ?
(1) 97 (2) 98
(3) 99 (4) 101

Directions (4–6): In the following questions, select the odd word/letter/number from the given alternatives.

4. (1) Calendar: Dates
(2) Dairy: Milk
(3) Notebook: Notes
(4) Accounts: Entries

5. (1) M (2) E
(3) S (4) W

6. (1) 26 (2) 50
(3) 82 (4) 120

7. Arrange the given words in the sequence in which they occur in the dictionary.
1. Train
2. Topper
3. Tingling
4. Tumbler
5. Traction
(1) 23541 (2) 32154
(3) 25314 (4) 32514

Directions (8–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

8. DK, FN, HQ, ?
(1) KS (2) JT
(3) KT (4) JS

9. 2, 5, 17, 71, ?
(1) 131 (2) 247
(3) 359 (4) 419

10. Akshar remembers that the match is after 26th April but before 30th April, while Suresh remembers that the match is after 22nd April but before 28th April. On which date of April is the match?
(1) 29 (2) 26
(3) 27 (4) 28

11. In a row of books a book of English is 16th from left end of row. A book of Mathematics is 12th from the right end. If the Mathematics book is 6th to the right of the English book, then how many total books are in the row?
(1) 33 (2) 32
(3) 34 (4) 31

12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
Passenger
(1) Anger (2) Pass
(3) Page (4) Pain

13. In a certain code language, "TREASON" is written as "RKWWINX" and "POULTRY" is written as "CNXHYKT". How is "NUMBER" written in that code language?
(1) NIXQQR (2) JAIFAV
(3) RQQXIN (4) VAFIAJ

14. In the following questions, by using which mathematical operators will the expression become correct?
30 ? 6 ? 4 ? 5 ? 4
(1) –, =, × and +
(2) +, =, × and –
(3) =, ×, + and –
(4) –, +, = and ×

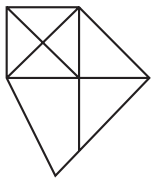
15. If 13 # 9 = 94 and 18 # 7 = 100, then 24 # 6 = ?
(1) 121 (2) 113
(3) 148 (4) 115

16. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.

2	5		7	10		8	11
14	9		19	14		20	?

(1) 14 (2) 15
(3) 17 (4) 19

17. How many triangles are there in the given figure?



(1) 11 (2) 12
(3) 13 (4) 15

18. In each of the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known

facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements?

Statements:

All books are erasers.

All sharpeners are books.

Conclusions:

I. All sharpeners are erasers.

II. Some books are sharpeners.

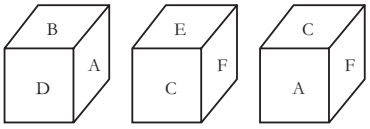
(1) Only conclusion I follows

(2) Only conclusion II follows

(3) Both conclusions follow

(4) Neither conclusions I nor II follows

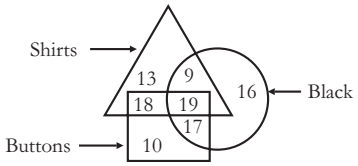
19. Two positions of a cube are shown below. What will come opposite to face containing 'E'?



(1) B (2) D

(3) A (4) F

20. In the given figure, how many black buttons are shirts?



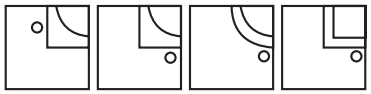
(1) 37 (2) 19

(3) 36 (4) 27

21. Which answer figure will complete the pattern in the question figure?

Question Figure

Answer Figures

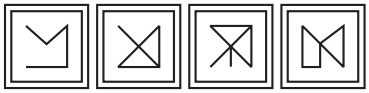


(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

Answer Figures

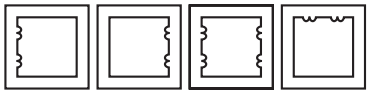


(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figure

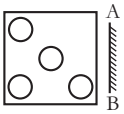
Answer Figures



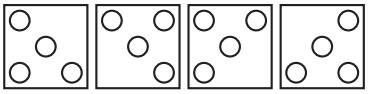
(1) (2) (3) (4)

24. If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'P' can be represented by 12, 43, etc. and 'O' can be represented by 67, 88, etc. Similarly, you have to identify the set for the word 'STROM'.

Matrix-I

	0	1	2	3	4
0	P	Q	R	S	T
1	S	T	P	Q	R
2	Q	R	S	T	P
3	T	P	Q	R	S
4	R	S	T	P	Q

Matrix-II

	5	6	7	8	9
5	N	O	M	L	K
6	L	K	O	M	N
7	O	L	N	K	M
8	M	N	K	O	L
9	K	M	L	N	O

(1) 10, 04, 33, 57, 69

(2) 41, 42, 14, 68, 86

(3) 34, 23, 40, 88, 78

(4) 22, 11, 21, 75, 96

PART-II (GENERAL AWARENESS)

26. An economic system combining private and state enterprise is called as ..... .

(1) Market economy

(2) Centrally planned economy

(3) Private economy

(4) Mixed economy

27. What was the main motive of Third Five Year Plan in India?

(1) Rural development

(2) Agriculture

(3) Financial inclusion

(4) Economic reform

28. Under which Article, President of India can proclaim constitutional emergency?
(1) Article 32 (2) Article 349
(3) Article 356 (4) Article 360

29. How many members of upper house (Rajya Sabha) can be nominated by President of India?
(1) 10 (2) 12
(3) 14 (4) 16

30. Who wrote 'Akbarnama'?
(1) Abul Fazal
(2) Faizi
(3) Abdur Rahim
(4) Abdul Qadir

31. Which Sikh Guru initiated 'The Khalsa'?
(1) Guru Nanak Dev
(2) Guru Gobind Singh
(3) Guru Angad Dev
(4) Guru Tegh Bahadur

32. A difference between 2 longitudes at equator is nearby equivalent to ..... km.
(1) 101 (2) 111
(3) 121 (4) 91

33. Which of the following winds are hot dust laden and blow from Sahara desert towards Mediterranean Region?
(1) Sirocco (2) Loo
(3) Foehn (4) Mistral

34. Which of the following are longest cells of human body?
(1) Pancreatic cells
(2) Epethelial cells
(3) Nerve cells
(4) Epidermal cells

35. Which of the following is responsible for giving colour to human skin?
(1) Luciferin (2) Haemoglobin
(3) Flavonoids (4) Melanin

36. Which of the following disease is non-communicable in nature?
(1) Cholera (2) Chicken-pox
(3) Tuberculosis (4) Cancer

37. Electric Motor converts ..... energy to mechanical energy.
(1) sound (2) mechanical
(3) chemical (4) electrical

38. Optical fibre works on which of the following principle of light?
(1) Reflection
(2) Refraction
(3) Diffraction
(4) Total internal reflection

39. Which key is used to move to next line in a MS-Word document?
(1) Enter key (2) Escape key
(3) Shift key (4) Return key

40. In which industry Potassium Nitrate is used commercially?
(1) Glass Manufacturing
(2) Electroplating
(3) Fire Cracker Manufacturing
(4) Leather Industry

41. Which of the following is not an example of Allotrope?
(1) Diamond (2) Graphite
(3) Ozone (4) Steel

42. Which of the following three R's are regarded as environment friendly?
(1) Reduce – Reuse – Recycle
(2) Reduce – Reuse – Reutilize
(3) Recollect – Reuse – Reutilize
(4) Reduce – Renew – Reutilize

43. In which of the following city "Urja Ganga", 1500 km long gas pipeline project has been launched in October, 2016?
(1) Ahmedabad (2) New Delhi
(3) Ghaziabad (4) Varanasi

44. Who invented Pentium Chip?
(1) C. Kumar Patel
(2) Tom Gunter
(3) Vince Emery
(4) Vinod Dham

45. What is the duration (in minutes) of one-half of a football match?
(1) 30 minutes (2) 35 minutes
(3) 40 minutes (4) 45 minutes

46. Which one of the following films was not directed by Satyajit Ray?
(1) Shatranj ke khiladi
(2) Charulata
(3) Jalsaghar
(4) Gumnam

47. Match the following (Arjuna Award 2016).

	Sport		Player
1.	Shooting	a.	Ajinkya Rahane
2.	Hockey	b.	Apurvi Chandela
3.	Cricket	c.	Ritu Rani

(1) 1-b, 2-a, 3-c (2) 1-c, 2-a, 3-b
(3) 1-b, 2-c, 3-a (4) 1-c, 2-b, 3-a

48. Which play of Shakespeare's was recently claimed to be dated wrongly?
(1) Macbeth (2) Othello
(3) Hamlet (4) Romeo Julliet

49. Which of the following country has co-sponsored 'Cobra Gold' – an annual multilateral militry exercise alongwith Thailand?
(1) India (2) Indonesia
(3) USA (4) China

50. The Gurudwara 'Panja Sahib' is located in which neighbouring country of India?
(1) Pakistan (2) Bangladesh
(3) Sri Lanka (4) Nepal

PART-III
(QUANTITATIVE APTITUDE)

51. By what least number should 1200 be multiplied so that it becomes a perfect square?
(1) 2 (2) 3
(3) 5 (4) 13

52. A, B and C can complete a work in 10, 12 and 15 days respectively. All three of them starts together but after 2 days A leaves the job and B left the job 3 days before the work was completed. C completed the remaining work alone. In how many days was the total work completed?
(1) 5 days (2) 6 days
(3) 7 days (4) 8 days

53. A solid sphere of diameter 7 cm is cut into two equal halves. What will be the increase (in cm^2) in the total surface area?
(1) 77 cm^2 (2) 154 cm^2
(3) 87 cm^2 (4) 38.5 cm^2

54. After a discount of 23% an article is sold for ₹ 1,848/-. What is the marked price (in ₹) of the article?
(1) ₹ 2,150/- (2) ₹ 2,275/-
(3) ₹ 2,350/- (4) ₹ 2,400/-

55. If $\frac{3}{5}P = \frac{7}{2}Q = \frac{7}{5}R$, then what is the ratio of P, Q and R respectively?
(1) 3 : 2 : 5 (2) 3 : 35 : 14
(3) 5 : 7 : 5 (4) 35 : 6 : 15

56. What is the average of first 93 natural numbers?
(1) 45 (2) 46
(3) 47 (4) 49

57. A trader sells two items at the rate of ₹ 400 each. If he gains 15% on one and losses 15% on other, then what is the value (in ₹) of loss?
(1) ₹ 18.41 (2) ₹ 22.14
(3) ₹ 20.25 (4) ₹ 24.36

58. 30% of a number exceeds 25% of the same number by 27. What is the value of the number?
(1) 540 (2) 270
(3) 108 (4) 90

59. 37 trees are planted in a straight line such that distance between any two consecutive trees is same. A car takes 20 sec to reach the 13th tree. How much more time (in sec) will it take to reach the last tree?
(1) 36 sec (2) 40 sec
(3) 57 sec (4) 60 sec

60. If a certain sum of money doubles itself in 7 years 8 months at simple interest, then what will be the yearly rate of interest (in %)?
(1) $18\frac{3}{4}\%$ (2) $13\frac{1}{23}\%$
(3) $26\frac{2}{23}\%$ (4) 30%

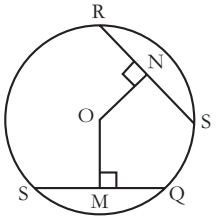
61. What is the value of $\frac{1}{x^{(p-q)}+1} + \frac{1}{x^{(q-p)}+1}$?
(1) 0 (2) 1
(3) $x^{(p-q)}$ (4) $x^{(p+q)}$

62. If $x = 8 + 2\sqrt{15}$, then what is the value of $\sqrt{x} + \frac{1}{\sqrt{x}}$?
(1) $2\sqrt{5}$
(2) $2\sqrt{3}$
(3) $\frac{(3\sqrt{5}+\sqrt{3})}{2}$
(4) $\frac{(3\sqrt{3}-\sqrt{5})}{2}$

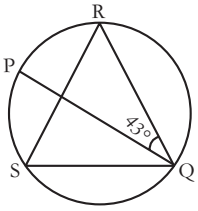
63. What is the value of $\frac{1+a}{a^{1/2}+a^{-1/2}} - \frac{a^{1/2}+a^{-1/2}}{1+a} + a^{-\frac{1}{2}}$?
(1) $\sqrt{a}$ (2) $\frac{1}{\sqrt{a}}$
(3) $\sqrt{a}+1$ (4) $\sqrt{a}-1$

64. If $\frac{p}{q} = \frac{x+3}{x-3}$, then what is the value of $\frac{p^2+q^2}{p^2-q^2}$?
(1) $\frac{x^2+9}{3x}$ (2) $\frac{x^2+18}{6x}$
(3) $\frac{x^2+18}{3x}$ (4) $\frac{x^2+9}{6x}$

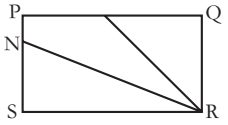
65. PQRS is a square, M is the mid-point of PQ and N is a point on QR such that NR is two-third of QR. If the area of ΔMQN is 48 cm^2, then what is the length (in cm) of PR?
(1) $12\sqrt{2}$ cm (2) 12 cm
(3) 24 cm (4) $24\sqrt{2}$ cm

66.


In the given figure, PQ = 30, RS = 24 and OM = 12, then what is the value of ON?
(1) 9 (2) 12
(3) 15 (4) 18

67.


In the given figure, PQ is the diameter of the circle. What is the measure (in degrees) of ∠QSR?
(1) 23° (2) 37°
(3) 47° (4) 57°

68.


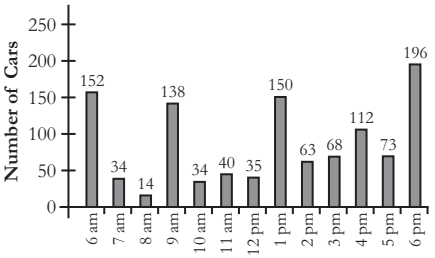
In the given figure, PM is one-third of PQ and PN is one-third of PS. If the area of PMRN is 17 cm^2, then what is the area (in cm^2) of PQRS?
(1) 34 cm^2 (2) 51 cm^2
(3) 68 cm^2 (4) 85 cm^2

69. What is the simplified value of (1 – sin A cos A) (sin A + cos A)?
(1) $\sin^2 A - \cos^2 A$
(2) $\sin^3 A + \cos^3 A$
(3) 0
(4) $\cos^2 A - \sin^2 A$

70. What is the simplified value of $\frac{\sqrt{1-\sin A}}{1+\sin A}$?
(1) tan A
(2) sec A
(3) sec A + tan A
(4) sec A – tan A

71. What is the simplified value of $\sqrt{\frac{1}{\sin^2 A} + \frac{1}{\cos^2 A}}$?
(1) sin A cos A (2) tan A + cot A
(3) sin 2A (4) tan A cot A

Directions (72–75): The bar chart given below shows the number of cars parked in a multilevel parking from 6 am to 6 pm on a given day.



72. What is the average number (approximately) of cars parked per

hour from 6 am to 6 pm on the given day?

(1) 80 (2) 85
(3) 73 (4) 78

73. At what time the percentage change in number of parked cars is the maximum?

(1) 9 am to 10 am
(2) 12 pm to 1 pm
(3) 8 am to 9 am
(4) 6 am to 7 am

74. For how many hours the number of parked cars is less than the average on the given day?

(1) 5 (2) 8
(3) 6 (4) 7

75. If the charges of parking are ₹ 50 per hour, then what is the total income (in ₹) from 6 am to 6 pm on the given day?

(1) ₹ 55,500/- (2) ₹ 50,500/-
(3) ₹ 57,500/- (4) ₹ 59,500/-

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. Are not your father (1)/ and your elder brother (2)/ out of town? (3)/ No error (4)

77. Our office building comprises (1)/ seven floors and a restaurant at the top in an (2)/ area of about eight hundred sq. metres. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. John as well as his friends always ..... the permission of his mother before going for a rugby match.

(1) asks (2) receives
(3) seeks (4) soughts

79. My sister unlike my brothers ..... to have a career in Engineering.

(1) wants (2) want
(3) wish (4) aspire

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Boisterous

(1) Clamorous (2) Ferocious
(3) Fissiparous (4) Voluminous

81. Haggard

(1) Emaciate (2) Insane
(3) Rejected (4) Ridicule

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Ostentation

(1) Comical (2) Insane
(3) Modest (4) Swanky

83. Commiserate

(1) Debatable (2) Empathize
(3) Indifferent (4) Legion

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. Pillar to Post

(1) Main support of an object
(2) One place to another
(3) To be reluctant
(4) To incite others

85. Hobson's choice

(1) To choose first in row
(2) To make a careful choice
(3) No real choice at all
(4) To seek all favourable alternatives to choose from

Directions (86–87): Improve the **bold** part of the sentence.

86. William Shakespeare is the greatest of **all other** writers.

(1) all the
(2) any other
(3) the other
(4) No improvement

87. She is not used to **sleep** for so long.

(1) to be sleeping
(2) to sleep
(3) to sleeping
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

88. Giving undue favours to one's own kith and kin

(1) Ableism (2) Iconoclast
(3) Maiden (4) Nepotism

89. One who does not care for literature or art

(1) Dictator (2) Hypocrite
(3) Philistine (4) Primitive

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Colonel (2) Hypocracy
(3) Offence (4) Strength

91. (1) Preceded (2) Proceed
(3) Recede (4) Succeed

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. P. And if I think about something which didn't happen I start thinking about all the other things which didn't happen.

Q. But there is only ever one thing which happened at a particular time and a particular place.

R. And there are an infinite number of things which didn't happen at that time and that place.

S. A lie is when you say something happened which didn't happen.

(1) QSRP (2) SQPR
(3) SRQP (4) SQRP

93. P. The magnitude of the inter-dependence depends on the technique of production causing the shifts in the food supply curve.

Q. Interdependence of food and labour market is important for the development process.

R. Similarly, an upward shift in the food supply curve shifts up the food demand curve.

S. An upward shift in the food supply curve would simultaneously result in an upward shift in the labour demand curve.

(1) QSPR (2) QPRS
(3) PSRQ (4) SPQR

94. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.
Who teaches you mathematics?
(1) By whom are you taught Mathematics?
(2) By whom were you taught Mathematics?
(3) By whom will you be taught Mathematics?
(4) Mathematics is taught by whom?

95. In the following question, a sentence has been given in Direct/ Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.
"I don't know the answer. Do you"? She asked.
(1) She asked me if I knew the answer which she didn't.
(2) She said that she didn't know the answer and did I know it.
(3) She said that she didn't know the answer and asked me if I did.
(4) She told that she was not knowing the answer but wondered if I know.

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

Education is for life, not merely for a livelihood. As long as we are unmindful of this ...**(96)**... , the ...**(97)**... of our educational curriculum as well as that of our ...**(98)**...and students is likely to remain ...**(99)**... . It is not enough for a society to have experts. It needs human beings who can think, feel and act generously, the kind of people who cannot be replaced by computers and ...**(100)**... .

96. (1) measure (2) resource
(3) story (4) truth

97. (1) efficiency (2) effectiveness
(3) quality (4) quantity

98. (1) friends (2) ideals
(3) parents (4) teachers

99. (1) inadequate
(2) indifferent
(3) represented
(4) unmeasurable

100. (1) mechanics
(2) monitors
(3) robots
(4) televisions

Short Answers

1. (2)	**2.** (2)	**3.** (3)	**4.** (2)	**5.** (2)	**6.** (4)	**7.** (4)	**8.** (2)	**9.** (3)	**10.** (3)
11. (1)	**12.** (4)	**13.** (1)	**14.** (1)	**15.** (2)	**16.** (2)	**17.** (3)	**18.** (3)	**19.** (3)	**20.** (2)
21. (2)	**22.** (4)	**23.** (3)	**24.** (4)	**25.** (4)	**26.** (4)	**27.** (2)	**28.** (3)	**29.** (2)	**30.** (1)
31. (2)	**32.** (2)	**33.** (1)	**34.** (3)	**35.** (4)	**36.** (4)	**37.** (4)	**38.** (4)	**39.** (1)	**40.** (3)
41. (4)	**42.** (1)	**43.** (4)	**44.** (4)	**45.** (4)	**46.** (4)	**47.** (3)	**48.** (3)	**49.** (3)	**50.** (1)
51. (2)	**52.** (3)	**53.** (1)	**54.** (4)	**55.** (4)	**56.** (3)	**57.** (1)	**58.** (1)	**59.** (2)	**60.** (2)
61. (2)	**62.** (3)	**63.** (1)	**64.** (4)	**65.** (4)	**66.** (3)	**67.** (3)	**68.** (2)	**69.** (2)	**70.** (4)
71. (2)	**72.** (2)	**73.** (3)	**74.** (2)	**75.** (1)	**76.** (4)	**77.** (2)	**78.** (3)	**79.** (1)	**80.** (1)
81. (1)	**82.** (3)	**83.** (3)	**84.** (2)	**85.** (3)	**86.** (1)	**87.** (3)	**88.** (4)	**89.** (3)	**90.** (2)
91. (1)	**92.** (4)	**93.** (1)	**94.** (1)	**95.** (3)	**96.** (4)	**97.** (3)	**98.** (4)	**99.** (1)	**100.** (3)

Hints & Solutions

Part-I
(General Intelligence & Reasoning)

1. (2) Heart is a vital organ. Similarly, eyes are also organs.

2. (1) B P T W : C Q U X :: C H N S : D I O T
(+1, +1, +1, +1 | +1, +1, +1, +1)

3. (3) 48 : 63 :: 80 : 99
6×8 7×9 8×10 9×11

4. (2) Dairy is a place where milk is kept and milk products are made.

5. (2) E is a vowel while all other are constants.

6. (4) $26 \rightarrow (5)^2 + 1 = 25 + 1 = 26$
$50 \rightarrow (7)^2 + 1 = 49 + 1 = 50$

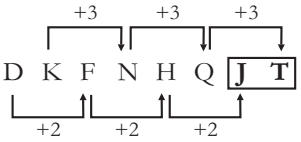
$82 \rightarrow (9)^2 + 1 = 81 + 1 = 82$

$\boxed{120 \rightarrow (11)^2 - 1 = 121 - 1 = 120}$

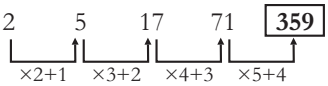
7. (4) Arrangement of the words as per English dictionary:

Tingling (3) → Topper (2) → Traction (5) → Train (1) → Tumbler (4).

8. (2)



9. (3)



10. (3) According to Akshar,

Match → 27th, 28th or 29th April.

According to Suresh,

Match → 23rd, 24th, 25th, 26th or 27th April.

Common Date → 27th April.

11. (1) Total number of books in a row

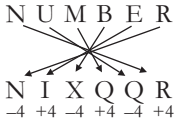
$= 16 + 6 + 12 - 1$

$= 34 - 1 = 33$

12. (4) The word 'Pain' cannot be formed using the letters of the given word because the word 'Passenger' does not have 'i' letter.

13. (1) As,

Similarly,



14. (1) 30 ? 6 ? 4 ? 5 ? 4

From option (1),

$30 - 6 = 4 \times 5 + 4$

$24 = 20 + 4$

$24 = 24$

15. (2) As,

$13 \# 9 \rightarrow 13 \times 9 - (13 + 9) - 1 = 117 - 22 - 1 = 94$

$18 \# 7 \rightarrow 18 \times 7 - (18 + 7) - 1 = 126 - 25 - 1 = 10$

Similarly,

$24 \# 6 \rightarrow 24 \times 6 - (24 + 6) - 1 = 144 - 30 - 1 = \mathbf{113}$

16. (2) As,

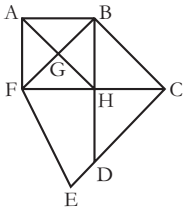
$2 + 3 = 5, 5 + 4 = 9, 9 + 5 = 14$

$7 + 3 = 10, 10 + 4 = 14, 14 + 5 = 19$

Similarly,

$8 + 3 = 11, 11 + 4 = \mathbf{15}\ 15 + 5 = 20$

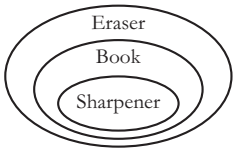
17. (3)



Triangles = GFH, GBA, GAF, GBH, AFH, ABH, BAF, BHF, BHC, DHC, CBD, BFC, ΔECF

Number of triangles = 13

18. (3)



19. (3) B, C, D and F are on the faces adjacent to A.

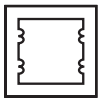
∴ A lies opposite E.

20. (2) Black buttons which are shirts can be shown by the number present in all the three geometrical figures. Such number is '19'.

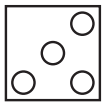
21. (2)

22. (4)

23. (3)



24. (4)



25. (4) S → 10, 41, **22**, 03, 34

T → 30, **11**, 42, 23, 04

R → 40, **21**, 02, 33, 14

O → **75**, 56, 67, 88, 99

M → 85, **96**, 57, 68, 79

For given word STROM, group of letters can be represented by the numbers → 22, 11, 21, 75, 96

PART-II (GENERAL AWARENESS)

26. (4) **Mixed Economy:** It is an economic system consisting of a mixture of either markets and economic planning, public ownership and private ownership or markets and economic interventionism.

27. (2) **Third Five-Year Plan (1961–66):** The plan stressed agriculture and improvement in the production of wheat. It aimed to increase in the agricultural produce and to achieve self-sufficiency by increasing foodgrain production. The plan failed miserably and the government was forced to declare "plan holidays" (from 1966–67, 1967–68 and 1968–69).

28. (3) **Article 356:** It is one of the Emergency provisions of the Indian Constitution. It covers provisions in case of failure of constitutional machinery in State. It confers a power upon the President to be exercised only where he is satisfied that a situation has arisen where the government of a State can not be carried on in accordance with the provisions of the Constitution.

29. (2) Article 80(3) of the Constitution of India authorises the President of India to nominate a maximum of 12 members to the Rajya Sabha.

30. (1) **Akbarnama:** The book of Akbar written in Persian by Abul Fazl, one of the Nine Jewels of Akbar's royal court. It is the official chronicle of the reign of Akbar, the third Mughal Emperor, commissioned by Akbar himself.

31. (2) **Khalsa (means Pure):** The name given by Guru Gobind Singh to all Sikhs who have been baptised or initiated by taking Amrit in a ceremony called Amrit Sanchar.

32. (2) At the equator, the distance between two longitudes is 111.1 kms. Unlike latitude, the distance between degrees of longitude varies greatly.

33. (1) **Sirocco:** It is the local name given to hot, dry and dusty winds blowing from Sahara Desert over central Mediter-ranean

and southern Italy in front of an advancing depression.

34. (3) The longest cells in the human body are neurons or nerve cells. These are cells within the nervous system and carry messages throughout the body.

35. (4) Although an individual's skin colour is influenced by numerous factors, the most significant is its content of a pigment called melanin. Melanin is also the pigment responsible for determining hair and eye colour.

36. (4) **Cancer:** It is a non-communicable disease since it is not transmitted from one person or animals or bird to another. Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body.

37. (4) **Electric Motor:** It is an electrical machine that converts electrical energy into mechanical energy.

38. (4) **Optical Fiber:** It is a cylindrical dielectric waveguide that transmits light along its axis, by the process of total internal reflection.

39. (1) The enter key is used to move to next line in a MS Word document.

40. (3) **Potassium Nitrate (KNO_3):** It is one of the major constituents of gunpowder (black powder). It is commercially used in fertilizers, rocket propellants and fireworks. It is one of the major constituents of gunpowder (black powder).

41. (4) Diamond and graphite are the allotropes of pure carbon and ozone is a very reactive allotrope of oxygen.

42. (1) Reduce, reuse and recycle (R3) are the three essential components of environmentally responsible consumer behavior.

43. (4) **Urja Ganga Gas Pipeline Project:** It was inaugurated by Prime Minister Narendra Modi in his constituency Varanasi, Uttar Pradesh, on 24 October 2016. Under this project, a 2540-km long pipeline is planned to be laid across the states forth Uttar Pradesh to Odisha.

44. (4) **Vinod Dham:** He was invented the first Pentium Processor that made Intel the word's biggest chip-maker. He invented the AMD K6, popularly known as the 'Pentium Killer'.

45. (4) A football match consists of two halves and each half is 45 minutes long.

46. (4) Gumnam is a 1965 Indian Bollywood suspense thriller film, directed by Raja Nawathe. Main lead in the film is played by Manoj Kumar, Nanda, Pran, Helen and Mehmood.

47. (3)

Player	Sport
Ajinkya Rahane	Cricket
Apurvi Chandela	Shooting
Ritu Rani	Hockey

48. (3) According to a new research published in January 2017, William Shakespeare's popular play Hamlet was dated wrongly. Until recently, academics believed that Shakespeare wrote Hamlet in early 1601. However, they now believe it was written in 1603 A.D.

49. (3) **Cobra Gold:** It is an annual multilateral military exercise co-sponsored by Thailand and the USA. The exercise is a part of the USA's efforts to expand regional cooperation and collaboration in vital areas such as disaster relief.

50. (1) **Gurdwara Panja Sahib:** The famous gurdwara located in Hasan Abdal, Pakistan. The shrine is considered to be particularly important as the handprint of the founder of Sikhism, Guru Nanak, is believed to be imprinted on a boulder at the gurdwara.

PART-III
(QUANTITATIVE APTITUDE)

51. (2)

2	1200
2	600
2	300
2	150
3	75
5	25
5	5
	1

$1200 \rightarrow \overline{2\times2} \times \overline{2\times2} \times \overline{5\times5} \times 3$

1200 multiplied by 3, is a perfect square.

52. (3) Total work completed = x days

According to question,

$$\frac{2}{10} + \frac{x-3}{12} + \frac{x}{15} = 1$$

or, $$\frac{12 + 5x - 15 + 4x}{60} = 1$$

or, $$9x - 3 = 60$$

or, $$9x = 63$$

$\therefore$ $$x = 7 \text{ days}$$

53. (1) Total surface area of solid sphere $= 4\pi r^2$

$$= 4 \times \frac{22}{7} \times \left(\frac{7}{2}\right)^2$$

$$= 154 \text{ cm}^2$$

Total surface area of two hemisphere

$$= 2 \times 3\pi r^2$$

$$= 2 \times 3 \times \frac{22}{7} \times \left(\frac{7}{2}\right)^2$$

$$= 231 \text{ cm}^2$$

$\therefore$ Required increase

$$= 231 - 154 = 77 \text{ cm}^2$$

54. (4) Marked price = ₹ x

According to question,

$$x\left[\frac{100-23}{100}\right] = 1848$$

$$x = \frac{184800}{77}$$

$$x = ₹\ 2{,}400$$

55. (4) $\frac{3}{5}P = \frac{7}{2}Q = \frac{7}{5}R = K$

$P = \frac{5K}{3}$, $Q = \frac{2K}{7}$, $R = \frac{5K}{7}$

$P : Q : R = \frac{5}{3}K : \frac{2}{7}K : \frac{5K}{7} = 35 : 6 : 15$

56. (3) Average of the first 93 natural numbers

$$= \frac{n+1}{2} = \frac{93+1}{2}$$

$$= 47$$

57. (1) Cost price of the first item

$$= 400 \times \frac{100}{115} = \frac{8000}{23}$$

Cost price of the first item

$$= 400 \times \frac{100}{85} = \frac{8000}{17}$$

Total cost price $= \frac{8000}{23} + \frac{8000}{17}$

$$= 8000\frac{[17+23]}{17\times 23}$$

$$= \frac{320000}{391}$$

Total selling price = $2 \times 400 = 800$

$$\text{Loss} = \frac{320000}{391} - 800$$

$$= \frac{320000 - 312800}{391}$$

$$= \frac{7200}{391} = 18.41$$

58. (1) Value of the number = x

According to question,

$$\frac{30x}{100} - \frac{25x}{100} = 27$$

or, $5x = 27 \times 100$

or, $x = 27 \times 20$

$\therefore$ $x = 540$

59. (2) Time taken by car to reach 13th tree = 20 second

Time taken by car to reach last tree

$$= \frac{(37-13)\times 20}{12}$$

= 40 second

60. (2) Yearly rate of interest = r%

Principal = P

Amount = 2P

Simple interest = 2P – P = P

Time = 7 years 8 months

$$= 7 + \frac{8}{12} = 7 + \frac{2}{3}$$

$$= \frac{23}{3} \text{ years}$$

$$\frac{P\times r\times 23}{100\times 3} = P$$

$$r = \frac{300}{23}$$

$$r = 13\frac{1}{23}\%$$

61. (2) $\dfrac{1}{x^{(p-q)}+1} + \dfrac{1}{x^{(q-p)}+1}$

$$= \frac{x^{(q-p)}+1+x^{p-q}+1}{(x^{p-q}+1)(x^{q-p}+1)}$$

$$= \frac{x^{q-p}+x^{p-q}+2}{x^{p-q}.x^{q-p}+x^{q-p}+x^{p-q}+1}$$

$$= \frac{x^{q-p}+x^{p-q}+2}{x^{p-q+q-p}+x^{q-p}+x^{p-q}+1}$$

$$= \frac{x^{q-p}+x^{p-q}+2}{x^{0}+x^{q-p}+x^{p-q}+1}$$

$$= \frac{x^{q-p}+x^{p-q}+2}{1+x^{q-p}+x^{p-q}+1}$$

$$= \frac{x^{q-p}+x^{p-q}+2}{x^{q-p}+x^{p-q}+2} = 1$$

62. (3) $x = 8 + 2\sqrt{15}$

$$\sqrt{x} = \sqrt{8+2\sqrt{15}}$$

$$\sqrt{x} = \sqrt{(\sqrt{5}+\sqrt{3})^2}$$

$$\sqrt{x} = \sqrt{5}+\sqrt{3}$$

$$\frac{1}{\sqrt{x}} = \frac{1}{\sqrt{5}+\sqrt{3}} \times \frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}-\sqrt{3}}$$

$$\frac{1}{\sqrt{x}} = \frac{\sqrt{5}-\sqrt{3}}{2}$$

$$\sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{5}+\sqrt{3}+\frac{\sqrt{5}-\sqrt{3}}{2}$$

$$= \frac{2\sqrt{5}+2\sqrt{3}+\sqrt{5}-\sqrt{3}}{2}$$

$$= \frac{3\sqrt{5}+\sqrt{3}}{2}$$

63. (1) $\dfrac{1+a}{a^{\frac{1}{2}}+a^{-\frac{1}{2}}} - \dfrac{a^{\frac{1}{2}}+a^{-\frac{1}{2}}}{1+a} + a^{-\frac{1}{2}}$

$$= \frac{(1+a)^2-(a^{\frac{1}{2}}+a^{-\frac{1}{2}})^2}{(a^{\frac{1}{2}}+a^{-\frac{1}{2}})(1+a)} + a^{-\frac{1}{2}}$$

$$= \frac{1+a^2+2a-a-a^{-1}-2+a^{-\frac{1}{2}}(a^{\frac{1}{2}}+a^{-\frac{1}{2}})(1+a)}{(a^{\frac{1}{2}}+a^{-\frac{1}{2}})(1+a)}$$

$$= \frac{a^2-1+a-a^{-1}+(1+a^{-1})(1+a)}{(a^{\frac{1}{2}}+a^{-\frac{1}{2}})(1+a)}$$

$$= \frac{a^2-1+a-a^{-1}+1+a^{-1}+a+1}{(a^{\frac{1}{2}}+a^{-\frac{1}{2}})(1+a)}$$

$$= \frac{1+a^2+2a}{\left(\sqrt{a}+\frac{1}{\sqrt{a}}\right)(1+a)}$$

$$= \frac{(1+a)^2}{\left(\frac{a+1}{\sqrt{a}}\right)(1+a)} = \frac{\sqrt{a}\,(1+a)^2}{(1+a)^2}$$

$$= \sqrt{a}$$

64. (4) $\dfrac{p}{q} = \dfrac{x+3}{x-3}$

$$\frac{p^2}{q^2} = \frac{(x+3)^2}{(x-3)^2}$$

$$\frac{p^2+q^2}{p^2-q^2} = \frac{(x+3)^2+(x-3)^2}{(x+3)^2-(x-3)^2}$$

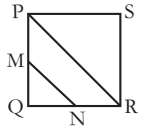
(**Rule:** Componendo and Dividendo)

$$\frac{p^2-a^2}{p^2-q^2} = \frac{x^2+9+6x+x^2+9-6x}{x^2+9+6x-x^2-9+6x}$$

$$= \frac{2x^2+18}{12x}$$

$$\frac{p^2+q^2}{p^2-q^2} = \frac{x^2+9}{6x}$$

65. (4) PQ = QR = a,



then $MQ = \dfrac{a}{2}$

and $NR = \dfrac{2}{3}a$

$$QN = a - \frac{2}{3}a = \frac{a}{3}$$

Area of $\Delta MQN = 48$

$$\frac{1}{2}\times\frac{a}{2}\times\frac{a}{3} = 48$$

$$a^2 = 48 \times 12$$

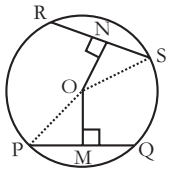
$\Rightarrow$ $a = 24$

PR = $\sqrt{2}$ PQ = $24\sqrt{2}$ cm

66. (3) PQ = 30, RS = 24, OM = 12

$$PM = \frac{30}{2} = 15,$$

$$NS = \frac{24}{2} = 12$$



In ΔPOM,

$OP^2 = (15)^2 + (12)^2 = 225 + 144$

$OP^2 = 369$

In ΔONS,

$(OS)^2 = (ON)^2 + (12)^2$

$\because$ OP = OS (radius)

$\therefore$ $(OP)^2 = (ON)^2 + 144$

$369 = (ON)^2 + 144$

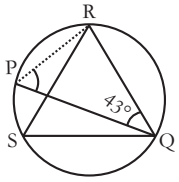
$(ON)^2 = 225$

$ON = 15$

67. (3) $\angle PQR = 43°$

$\therefore$ PQ = diameter

$\therefore$ $\angle PQR = 90°$



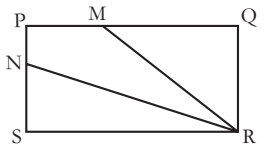
In ΔPQR,

$\angle RPQ = 180° - 90° - 43°$

$\angle RPQ = 47°$

$\angle QSR = \angle RPQ = 47°$

68. (2) PS = QR = a, PQ = SR = b



$PN = \frac{a}{3}$, $NS = a - \frac{a}{3} = \frac{2a}{3}$

$PM = \frac{b}{3}$, $MQ = a - \frac{a}{3} = \frac{2a}{3}$

Area of $\Delta NSR = \frac{1}{2} \times \frac{2a}{3} \times b$

$= \frac{ab}{3}$

Area of $\Delta MQR = \frac{1}{2} \times \frac{2b}{3} \times a$

$= \frac{ab}{3}$

Area of $\square$ PQRS = $\square$ PMRN + ΔMQR + ΔNSR

$ab = 17 + \frac{ab}{3} + \frac{ab}{3}$

$ab - 2\frac{ab}{3} = 17$

$ab = 51 \text{ cm}^2$

69. (2) $(1 - \sin A \cos A)(\sin A + \cos A)$

$= (\sin^2 A + \cos^2 A - \sin A \cos A)(\sin A + \cos A)$

$= \sin^3 A + \cos^3 A$

70. (4) $\sqrt{\frac{1 - \sin A}{1 + \sin A}}$

$= \sqrt{\frac{1 - \sin A}{1 + \sin A} \times \frac{1 - \sin A}{1 - \sin A}}$

$= \sqrt{\frac{(1 - \sin A)^2}{1 - \sin^2 a}} = \sqrt{\frac{(1 - \sin A)^2}{\cos^2 A}}$

$= \frac{1 - \sin A}{\cos A} = \frac{1}{\cos A} - \frac{\sin A}{\cos A}$

$= \sec A - \tan A$

71. (2) $\sqrt{\frac{1}{\sin^2 A} + \frac{1}{\cos^2 A}}$

$= \sqrt{\text{cosec}^2 A + \sec^2 A}$

$= \sqrt{1 + \cos^2 A + 1 + \tan^2 A}$

$= \sqrt{\tan^2 A + \cot^2 A + 2}$

$= \sqrt{\tan^2 A + \cot^2 A + 2 \tan A \cot A}$

$= \sqrt{(\tan A + \cot A)^2}$

$= \tan A + \cot A$

72. (2) Required average

$= \frac{152 + 35 + 14 + 138 + 34 + 40 + 35 + 150 + 63 + 68 + 112 + 73 + 196}{13}$

$= \frac{1110}{13} \approx 85$

73. (3) 8 am to 9 pm = $\frac{138 - 14}{14} \times 100$

$= 885.7\%$

74. (2) It is obvious from the graph.

75. (1) Total number of cars parked = 1110

Total income = 1110×50

= ₹ 55500

PART-IV (ENGLISH LANGUAGE)

76. (4) In the given sentence, no part has an error. Sentence is correct.

77. (2) In the given sentence, part (2) has an error. To correct the sentence use 'within' in place of 'in'.

78. (3) **Seek (Verb):** ask for something from someone; solicit; request.

Sentence → You may need to seek the advice of a specialist.

79. (1) Here, subject is My sister (singular). Hence, singular verb should be used.

80. (1) **Boisterous/Clamorous (Adjective):** noisy; energetic and cheerful; high-spirited; lively; active; rough and stormy.

Sentence → Her entire crew of sixteen men, after several hours in open boats on a boisterous sea, succeeded in getting ashore.

81. (4) **Haggard/Emaciate (Adjective):** looking ill or tired, often with dark skin under the eyes; looking exhausted and unwell.

Sentence → His illness had left its traces on his face which looked thin and haggard.

82. (3) **Opposite of Ostentation is Modesty (Noun):** humility; lack of pretension; fairness; freedom from boastfulness.

Sentence → She dresses stylishly without ostentation.

83. (3) Opposite of Commiserate is

Indifferent (Adjective): having no particular sympathy or interest; apathetic about; impassive.

Sentence → She went over to commiserate with Rose on her unfortunate circumstances.

84. (2) **Pillar to Post:** one place to another.

Sentence → My parents were always on the move and so my childhood was spent being dragged from pillar to post.

85. (3) **Hobson's Choice:** a choice of taking what is available or nothing at all; two options take it or leave it.

Sentence → It is a case of Hobson's choice because if I don't agree to their terms, I will lose my job.

86. (1) For improvement of sentence use 'all the' in place of 'all other'.

87. (3) For improvement of sentence use 'to sleeping' in place of 'to sleep'.

88. (4) Best substitute of the sentence is

Neptotism (Noun): Favouritism shown to relatives or close friends by those with power or influence.

He was guilty of nepotism and corruption.

89. (3) Best substitute of the sentence is

Philistine (Noun): Do not care or understand good art, music or literature.

A philistine government that allowed the art to decline.

90. (2) Correctly spelt word → Hypocrisy.

91. (1) Correctly spelt word → Precede.

92. (4) Logical order of the sentences to form a coherent paragraph → SQRP.

93. (1) Logical order of the sentences to form a coherent paragraph → QSPR.

94. (1) Passive/Active Voice.

By whom are you taught Mathematics?

95. (3) Indirect/Direct Speech

She said that she didn't know the answer and asked me if I did.

96. (4) Best option for blank → truth.

97. (3) Best option for blank → quality.

98. (4) Best option for blank → teachers.

99. (1) Best option for blank → inadequate.

100. (3) Best option for blank → robots.

❑❑❑

20

SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 05 August, 2017 (II)

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In the following questions, select the related word pair/ letter/number from the given alternatives.

1. Power : Watt : : ? : ?
(1) Pressure : Newton
(2) Force : Pascal
(3) Resistance : Mho
(4) Work : Joule

2. NPBG : OQCH : : AJOT : ?
(1) BKPU (2) BUPK
(3) BHKP (4) HBKU

3. 101 : 10201 : : 107 : ?
(1) 10707 (2) 10749
(3) 11449 (4) 11407

Directions (4–6): In the following questions, select the odd word/letter/ number from the given alternatives.

4. (1) Lion (2) Leopard
(3) Snake (4) Tiger

5. (1) NPR (2) TVW
(3) FHJ (4) KMO

6. (1) 69 (2) 59
(3) 61 (4) 53

7. Arrange the given words in the sequence in which they occur in the dictionary.
1. Ropped
2. Roster
3. Roasted
4. Road
5. Roller
(1) 35412 (2) 45312
(3) 34512 (4) 43512

Directions (8–9): A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

8. BCF, CDG, DEH, ?
(1) EFI (2) EFG
(3) DFI (4) EGI

9. 2, 5, 12, 27, ?
(1) 53 (2) 56
(3) 57 (4) 58

10. If 'P 3 Q' means 'P is daughter of Q', 'P 5 Q' means 'P is father of Q', 'P 7 Q' means 'P is mother of Q' and 'P 9 Q' means 'P is sister of Q', then how is J related to K in J 3 L 9 N 3 O 5 K?
(1) Mother (2) Wife
(3) Niece (4) Daughter

11. Rakhi got engaged 10 years ago. Rakhi's present age is $\frac{5}{3}$ of her age at the time of engagement. If the present age of Rakhi's mother is twice that of present age of Rakhi, then what was her mother's age (in year) at the time of her engagement?
(1) 50 years (2) 40 years
(3) 30 years (4) 60 years

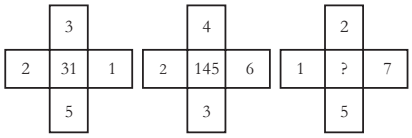
12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.
Suspensefulness
(1) Sense (2) Fuels
(3) Useful (4) Fullness

13. In a certain code language, "BAD" is written as "7" and "SAP" is written as "9". How is "BAN" written in that code Language?
(1) 8 (2) 3
(3) 4 (4) 6

14. In the following question, correct the equation by interchanging two signs.
$9 \times 3 + 8 \div 4 - 7 = 28$
(1) × and – (2) + and –
(3) ÷ and + (4) × and ÷

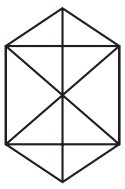
15. If 4 * 5 % 3 = 8000 and 2 * 3 % 2 = 36, then 4 * 3 % 3 = ?
(1) 432 (2) 1728
(3) 36 (4) 144

16. In the following question, select the number which can be placed at the sign of question mark (?) from the given alternatives.



(1) 43 (2) 49
(3) 59 (4) 71

17. How many triangles are there in the given figure?



(1) 20 (2) 22
(3) 28 (4) 32

18. In each of the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements?

Statements:
Some pens are pencils.
All pencils are erasers.

Conclusions:

I. Some pens are erasers.

II. No pens are erasers.

III. Some erasers are pencils.

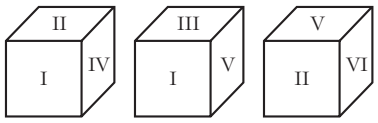
(1) Only Conclusion II follows

(2) Both conclusions I and II follow

(3) Both Conclusions I and III follow

(4) No conclusion follows

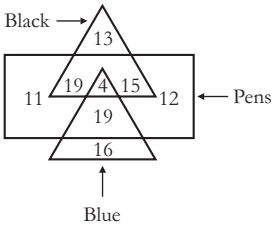
19. Three positions of a cube are shown below. What will come opposite to face containing 'I'?



(1) VI (2) IV

(3) II (4) V

20. In the given figure, how many pens are blue?

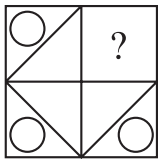


(1) 23 (2) 19

(3) 12 (4) 15

21. Which answer figure will complete the pattern in the question figure?

Question Figure



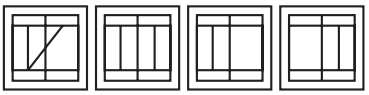
Answer Figures

(1) (2) (3) (4)

22. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

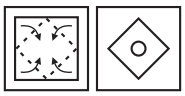
Answer Figures



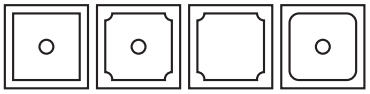
(1) (2) (3) (4)

23. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened?

Question Figure



Answer Figures

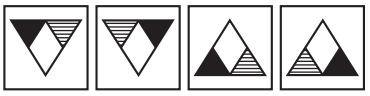


(1) (2) (3) (4)

24. If a mirror is placed on the line AB, then which of the answer figures is the right image of the given figure?

Question Figure

Answer Figures



(1) (2) (3) (4)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'K' can be represented by 01, 34 etc., and 'P' can be represented by 65, 99 etc. Similarly, you have to identify the set for the word "BLAND".

Matrix-I

	0	1	2	3	4
0	A	K	B	L	C
1	B	A	C	K	L
2	L	C	K	B	A
3	C	B	L	A	K
4	K	L	A	C	B

Matrix-II

	5	6	7	8	9
5	N	O	P	S	D
6	P	D	S	N	O
7	O	P	N	D	S
8	D	S	O	P	N
9	S	N	D	O	P

(1) 10, 14, 00, 68, 79

(2) 31, 41, 33, 96, 86

(3) 44, 20, 42, 88, 59

(4) 23, 32, 24, 55, 66

PART-II
(GENERAL AWARENESS)

26. At which rate, Reserve Bank of India borrows money from commercial banks?

(1) Bank Rate

(2) Repo Rate

(3) Reverse Repo Rate

(4) Statutory Liquidity Rate

27. Movement along the supply curve is known as ..... .

(1) Contraction of Supply

(2) Expansion of Supply

(3) Increase in Supply

(4) Expansion and Contraction of Supply

28. What is the minimum age required to become Vice-President of India?

(1) 30 years (2) 35 years

(3) 40 years (4) 37 years

29. Which of the following "writ" of the High Court or the Supreme Court is issued to restrain a person

from holding a public office which he is not entitled to?
(1) Centiorari
(2) Mandamus
(3) Prohibition
(4) Quo Warranto

30. Who was the son of Chandragupta Maurya?
(1) Bindusara
(2) Chandragupta II
(3) Ashoka
(4) Binbsara

31. Which dynasty came to power in India after the Tughlaq dynasty?
(1) The Guptas (2) The Khiljis
(3) The Mughals (4) The Sayyids

32. Which planet is considered as the Dwarf planet?
(1) Earth (2) Jupiter
(3) Pluto (4) Saturn

33. Sandstone is which type of rock?
(1) Calcareous Rock
(2) Igneous Rock
(3) Metamorphic Rock
(4) Sedimentary Rock

34. Wheat is a ..... .
(1) Creeper (2) Herb
(3) Shrub (4) Tree

35. Snakes, turtle, lizards and crocodiles falls under which category of animals?
(1) Pisces (2) Amphibian
(3) Reptilian (4) Aves

36. Which of the following instrument is used to measure Soil Water Tension?
(1) Photometer (2) Pyrometer
(3) Psychrometer (4) Tensiometer

37. What is the S.I. unit of Force?
(1) Pascal (2) Boyle
(3) Newton (4) Watt

38. Which one of the following is a bad Thermal Conductor?
(1) Aluminium (2) Copper
(3) Glass (4) Silver

39. Which of the following stores data permanently in a computer?
(1) A.L.U.
(2) Cache Memory
(3) RAM
(4) ROM

40. Rusting is ..... .
(1) Electrolysis
(2) Oxidation
(3) Redox reaction (Oxidation and Reduction)
(4) Reduction

41. Which amongst the following is not a Cation?
(1) Aluminium ion
(2) Copper ion
(3) Sulphate ion
(4) Zinc ion

42. Which of the following is not a component of Smog?
(1) Volatile organic compounds
(2) Nitrogen oxide
(3) Sulphur dioxide
(4) Chlorine oxide

43. NITI Aayog has been formed to replace which of the following institution?
(1) Planning Commission
(2) I.R.D.A.
(3) Department of Telecommunications (DoT)
(4) Department of Information Technology

44. Who invented first working laser?
(1) A.H. Taylor
(2) W.K. Roentgen
(3) T.H. Maiman
(4) Fred Morrission

45. Which of the following venue hosted its first ever test match on 9th November, 2016 which was played between India and England?
(1) J.S.C.A. International Stadium Complex, Ranchi
(2) Saurashtra Cricket Association Stadium, Rajkot
(3) Himachal Pradesh Cricket Association Stadium, Dharamshala
(4) Holkar Cricket Stadium, Indore

46. Match the following:

	Artist		Art form
1.	Gauri Shankar Devilal	a.	Flute
2.	Hari Prasad Chaurasia	b.	Painting
3.	M.F. Hussain	c.	Kathak
4.	Zakir Hussain	d.	Tabla

(1) 1-a, 2-d, 3-b, 4-c
(2) 1-b, 2-c, 3-a, 4-d
(3) 1-c, 2-a, 3-b, 4-d
(4) 1-c, 2-b, 3-a, 4-d

47. Who is the only Indian cricketer to have received the Polly Umrigar award 3 times?
(1) Sachin Tendulkar
(2) Virender Sehwag
(3) Virat Kohli
(4) Ravichandran Ashwin

48. Who is the author of the book titled "The Sellout"?
(1) Paul Beatty
(2) Arvind Adiga
(3) Elenor Catton
(4) Howard Jacobson

49. Which country was designated as the major defence partner of USA in December, 2016?
(1) Canada
(2) Israel
(3) India
(4) United Kingdom

50. With which country India did its seventh edition of bilateral EKUVERIN Exercise 2016 at Kadhdhoo?
(1) Nepal (2) Pakistan
(3) Maldives (4) Bhutan

PART-III
(QUANTITATIVE APTITUDE)

51. If X and Y are the two digits of the number 347XY such that the number is completely divisible by 80, then what is the value of X + Y?
(1) 2 (2) 4
(3) 6 (4) 8

52. A, B and C can complete a work in 20, 24 and 30 days respectively. All three of them start together but after 4 days A leaves the job and B left the job 6 days before the work was completed. C completed

the remaining work alone. In how many days was the total work completed?
(1) 10 days (2) 12 days
(3) 14 days (4) 16 days

53. A solid sphere of diameter 17.5 cm is cut into two equal halves. What will be the increase (in cm^2) in the total surface area?
(1) 289 cm^2 (2) 361.5 cm^2
(3) 481.25 cm^2 (4) 962.5 cm^2

54. After a discount of 34% an article is sold for ₹ 3,168/-. What is the marked price (in ₹) of the article?
(1) ₹ 4,750/- (2) ₹ 4,800/-
(3) ₹ 4,850/- (4) ₹ 5,000/-

55. If $\frac{3}{7}P = \frac{4}{11}Q$, then what is the ratio of P and Q respectively?
(1) 12 : 77 (2) 12 : 33
(3) 28 : 33 (4) 3 : 28

56. The average of 17 results is 60. If the average of first 9 results is 57 and that of the last 9 results is 65, then what will be the value of 9th result?
(1) 39 (2) 78
(3) 117 (4) 156

57. For an article the profit is 170% of the cost price. If the cost price increases by 20% but the selling price remains same, then what is the new profit percentage?
(1) 41% (2) 50%
(3) 75% (4) 125%

58. 32% of a number exceeds 17% of the same number by 120. What is the value of the number?
(1) 900 (2) 860
(3) 940 (4) 800

59. A boat goes 15 km upstream and $10\frac{1}{2}$ km downstream in 3 hours 15 minutes. It goes 12 km upstream and 1 km downstream in 3 hours. What is the speed of the boat in still water?
(1) 4 km/h (2) 6 km/h
(3) 10 km/h (4) 14 km/h

60. A person lent certain sum of money at 5% per annum simple interest and in 15 years the interest amounted to ₹ 250/- less than the sum lent. What was the sum lent (in ₹)?
(1) ₹ 1,000/- (2) ₹ 1,500/-
(3) ₹ 2,400/- (4) ₹ 3,000/-

61. If $x = \frac{2+\sqrt{3}}{2-\sqrt{3}}$, then what is the value of $x + \frac{1}{x}$?
(1) 14 (2) $8\sqrt{3}$
(3) 0 (4) 18

62. If $x = 2 + \sqrt{3}$, then what is the value of $\sqrt{2x} + \frac{1}{\sqrt{2x}}$?
(1) $2\sqrt{3}$ (2) $3\sqrt{3}$
(3) $\frac{(3\sqrt{3}+1)}{2}$ (4) $2\sqrt{3} + 1$

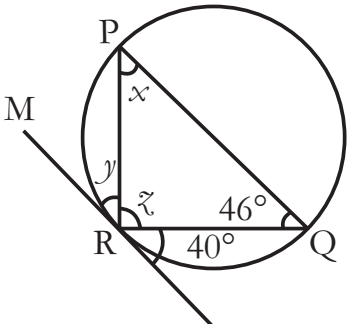
63. If $x + \frac{1}{x} = 4$, then what is the value of $x^6 + \frac{1}{x^6}$?
(1) 52 (2) 256
(3) 1026 (4) 2702

64. If $y = \frac{2-x}{1+x}$, then what is the value of $\frac{1}{y+1} + \frac{2y+1}{y^2-1}$?
(1) $\frac{(1+x)(2-x)}{2x-1}$
(2) $\frac{(1-x)(2+x)}{x-1}$
(3) $\frac{(1+x)(2-x)}{1-2x}$
(4) $\frac{(1+x)(1-2x)}{2-x}$

65. In the ΔABC, ∠BAC = 50° and the bisectors of ∠ABC and ∠ACB meets at P. What is the value (in degrees) of ∠BPC?
(1) 100° (2) 105°
(3) 115° (4) 125°

66. Two circles of same radius intersect each other at P and Q. If the length of the common chord is 30 cm and distance between the centres of the two circles is 40 cm, then what is the radius (in cm) of the circles?
(1) 25 cm (2) $25\sqrt{2}$ cm
(3) 50 cm (4) $50\sqrt{2}$ cm

67. In the given figure, ∠QRN = 40°, ∠PQR = 46° and MN is a tangent at R. What is the value (in degrees) of x, y and z respectively?



(1) 40°, 46°, 94° (2) 40°, 50°, 90°
(3) 46°, 54°, 80° (4) 50°, 40°, 90°

68. In ΔPQR, ∠R = 54°, the perpendicular bisector of PQ at S meets QR at T. If ∠TPR = 46°, then what is the value (in degrees) of ∠PQR?
(1) 25° (2) 40°
(3) 50° (4) 60°

69. What is the simplified value of $\frac{\cot A + \tan B}{\cot B + \tan A}$?
(1) tan B cot A (2) tan A cot B
(3) tan A tan B (4) cot A cot B

70. What is the simplified value of $\left(\frac{1}{\text{cosec } A + \cot A}\right)^2$?
(1) sec A + tan A
(2) $\frac{(1-\cos A)}{(1+\cos A)}$
(3) $\frac{(1-\text{cosec } A)}{(1+\text{cosec } A)}$
(4) sin A

71. If $\cos^2\theta - \sin\theta = \frac{1}{4}$, then what is the value of $\sin\theta$?
(1) –1 (2) $\frac{1}{2}$
(3) 1 (4) $\frac{3}{2}$

Directions (72–75): The table below shows the number of students of a college studying Arts, Science, Commerce and Business for given 5 years.

Year	Arts	Science	Commerce	Business
2012	48	105	148	32
2013	56	123	136	30
2014	64	125	144	36
2015	78	148	156	36
2016	92	161	168	48

72. What is the percentage increase in number of students of Commerce from 2012 to 2016?
(1) 11.16% (2) 17.28%
(3) 13.51% (4) 15.67%

73. What is the simple annual growth rate (in %) of the number of students of Business from 2012 to 2016?
(1) 10% (2) 12.5%
(3) 15% (4) 17.5%

74. What is the ratio of average number of students studying Arts per year and average number of students studying Science per year?
(1) 169 : 331 (2) 66 : 169
(3) 127 : 261 (4) 32 : 75

75. Which year shows the maximum percentage increase in the total number of students in these 4 subjects over the previous year?
(1) 2013 (2) 2014
(3) 2015 (4) 2016

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): In the following questions, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No error'.

76. The two men were (1)/quarrelling with one another (2)/ claiming the same watch as their own. (3)/ No error (4)

77. Everybody knows (1)/ that Bhutan is the most peaceful (2) of all other countries of the world. (3)/ No error (4)

Directions (78–79): In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and mark it by selecting the appropriate option.

78. The higher you climb, the more difficult it ..... to breathe.
(1) became (2) becomes
(3) has become (4) is becoming

79. Neha has been crying ..... morning.
(1) from (2) of
(3) since (4) till

Directions (80–81): In the following questions, out of the four alternatives, select the word similar in meaning to the word given.

80. Opulent
(1) Fake (2) Gloomy
(3) Rich (4) Selfish

81. Morose
(1) Flatter (2) Gloomy
(3) Friendly (4) Savvy

Directions (82–83): In the following questions, out of the four alternatives, select the word opposite in meaning to the word given.

82. Irk
(1) Attract (2) Discourage
(3) Irritate (4) Please

83. Grotesque
(1) Free (2) Odd
(3) Plain (4) Queer

Directions (84–85): In the following questions, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

84. To keep the wolf from the door
(1) Avoid starvation
(2) Crack the deal
(3) Entry prohibited
(4) Have a pleasant tour

85. Teething problems
(1) Oral problems
(2) Problems at the start of a new project
(3) Problems for quite a long time in adjusting in the new place
(4) Problem of having good dentist

Directions (86–87): Improve the **bold** part of the sentence.

86. She did not like to have coffee **nor I did.**
(1) neither I liked it
(2) nor did I
(3) nor I like it
(4) No improvement

87. Taj Mahal is **a worth seeing monument** in Agra.
(1) A monument to see its worth
(2) A monument worth seeing
(3) One of worth seeing monuments
(4) No improvement

Directions (88–89): In the following questions, out of the four alternatives, select the alternative which is the best substitute of the phrase.

88. That which cannot be corrected
(1) Impregnable (2) Immolation
(3) Incorrigible (4) Ineligible

89. A person who is blamed for the wrong doings of others
(1) Bursar (2) Captor
(3) Phlegmatic (4) Scapegoat

Directions (90–91): In the following questions, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

90. (1) Conceive (2) Leisure
(3) Neice (4) Reign

91. (1) Dictoinary (2) Irrelevant
(3) Perishable (4) Tangible

Directions (92–93): These questions below consist of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

92. P. It had been umpteen years since we had seen each other.
Q. One dull dark day in autumn, I was travelling on horseback through a dreary stretch of countryside.
R. This was the house of Roderick Usher, who had been my childhood pal.

S. At night fall, I came in sight of the house of Usher.

(1) PQSR (2) PSQR
(3) QSRP (4) QRSP

93. P. According to various estimates, between 1942 and 1944 there were approximately 400 victims of this practice daily in Warsaw alone, with numbers on some days reaching several thousands.

Q. A common German practice in occupied Poland was to round up random civilians on the streets of Polish cities.

R. For example, on 19th September, 1942 close to 3000 men and women were transported by train to Germany – they had been caught in the massive round-ups all over Warsaw the previous two days.

S. The term, "Lapanka" carried a sardonic connotation from the word's earlier use for the children's game known in English as "tag".

(1) SQRP
(2) SRPQ
(3) QSPR
(4) QPRS

94. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

An elephant may be helped even by an ant.

(1) An ant can even help a elephent.
(2) An ant may even help a elephant.
(3) Even an ant may help an elephant.
(4) Even an ant ought to help an elephant.

95. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Direct/Indirect speech.

"Please don't cry" he said.

(1) He begged that I should not cry.
(2) He begged me not to cry.
(3) He said to please him and not cry.
(4) He told me to not to cry.

Directions (96–100): In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The ...**96**... of lectures could be enhanced by introducing the lecture with a brief review of the work ...**97**... , it should also be indicated how the day's lecture ...**98**... into the course pattern. A lecture should ...**99**... be presented in one unbroken discourse. Unless exceptionally interesting, a long lecture strains the ...**100**... of a concentrated listening, causing intermittent wandering of attention and loss of continuity in thought.

96. (1) Condition
(2) Effectiveness
(3) Efficiency
(4) Interest

97. (1) Ascending
(2) Preceding
(3) Reciting
(4) Succeeding

98. (1) Adds
(2) Fits
(3) Gets
(4) Lets

99. (1) Continuously
(2) Often
(3) Randomly
(4) Seldom

100. (1) Authority
(2) Capacity
(3) Comfortability
(4) Reasonability

Short Answers

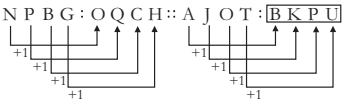
1. (4)	**2.** (1)	**3.** (3)	**4.** (3)	**5.** (2)	**6.** (1)	**7.** (4)	**8.** (1)	**9.** (4)	**10.** (3)
11. (2)	**12.** (4)	**13.** (1)	**14.** (4)	**15.** (2)	**16.** (4)	**17.** (2)	**18.** (3)	**19.** (1)	**20.** (1)
21. (1)	**22.** (1)	**23.** (2)	**24.** (3)	**25.** (4)	**26.** (3)	**27.** (4)	**28.** (2)	**29.** (4)	**30.** (1)
31. (4)	**32.** (3)	**33.** (4)	**34.** (2)	**35.** (3)	**36.** (4)	**37.** (3)	**38.** (3)	**39.** (4)	**40.** (3)
41. (3)	**42.** (2)	**43.** (3)	**44.** (3)	**45.** (2)	**46.** (3)	**47.** (3)	**48.** (1)	**49.** (3)	**50.** (3)
51. (1)	**52.** (3)	**53.** (3)	**54.** (2)	**55.** (3)	**56.** (2)	**57.** (4)	**58.** (4)	**59.** (3)	**60.** (1)
61. (1)	**62.** (3)	**63.** (4)	**64.** (3)	**65.** (3)	**66.** (1)	**67.** (1)	**68.** (2)	**69.** (1)	**70.** (2)
71. (2)	**72.** (3)	**73.** (2)	**74.** (1)	**75.** (3)	**76.** (2)	**77.** (3)	**78.** (2)	**79.** (3)	**80.** (3)
81. (2)	**82.** (4)	**83.** (3)	**84.** (1)	**85.** (2)	**86.** (2)	**87.** (2)	**88.** (3)	**89.** (4)	**90.** (3)
91. (1)	**92.** (3)	**93.** (3)	**94.** (3)	**95.** (2)	**96.** (2)	**97.** (2)	**98.** (2)	**99.** (4)	**100.** (2)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (4) 'Watt' is the unit of 'Power'. Similarly 'Joule' is the unit of 'work'.

2. (1) N P B G : O Q C H :: A J O T : B K P U

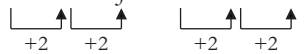


3. (3) 101 : 10201 :: 107 : **11449**

4. (3) Snake belongs to the class reptile while all others belong to the class Mammal.

5. (2) N P R **T V W**

F H J K M O

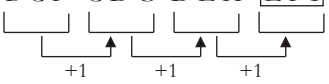


6. (1) Except 69, all others are prime numbers.

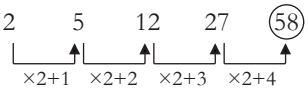
7. (4) Arrangement of the given words as per English dictionary is as follows :

Road (4) → Roasted (3) → Roller (5) → Ropped (1) → Roster (2)

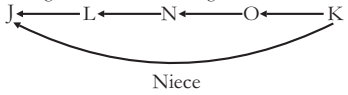
8. (1) B C F C D G D E H E F I



9. (4) 2 5 12 27 58



10. (3) Daughter Sister Daughter Father



11. (2) Rakhi's present age = x years

According to question,

$$x - 10 = x \times \frac{3}{5}$$

$$\frac{2x}{5} = 10$$

$$x = 25 \text{ years}$$

The present age of Rakhi's mother = $2 \times 25 = 50$ years

The age of Rakhi's mother at the time of her engagement = 50 – 10 = 40 years.

12. (4) By using the letters of word 'Suspensefulness', word 'Fullness' cannot be formed because in the given word, letter 'l' is used twice.

13. (1) As, BAD = 2 + 1 + 4 = 7

SAP = 19 + 1 + 16 = 36

= 3 + 6 = 9

Similarly,

BAN = 2 + 1 + 14 = 17

= 1 + 7 = 8

14. (4) $\boxed{\times \Rightarrow \div \mid \div \Rightarrow \times}$

$9 \div 3 + 8 \div 4 - 7 = 28$

From option (4),

$9 \div 3 + 8 \times 4 - 7 = 28$

$3 + 32 - 7 = 28$

$35 - 7 = 28$

$28 = 28$

15. (2) As,

$(4 \times 5)^3 = (20)^3 = 8000$

$(2 \times 3)^2 = (6)^2 = 36$

Similarly,

$(4 \times 3)^3 = (12)^3 =$ **1728**

16. (4) As,

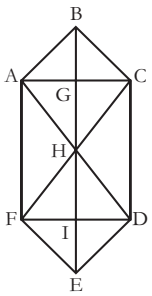
$2 \times 3 \times 1 \times 5 + 1 = 30 + 1 = 31$

$2 \times 4 \times 6 \times 3 + 1 = 144 + 1 =$ **145**

Similarly,

$1 \times 2 \times 7 \times 5 + 1 = 70 + 1 =$ **71**

17. (2)

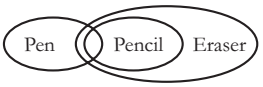


There are following triangles in the given figure:

BGA, BGC, BAC, AHB, CBH, HGA, MGC, HCA, HAF, HFD, HDC, HIF, HID, FEH, DHE, EID, EIF, EDF, AFC, AFD, DCA, DCF

∴ Total triangles in the given figure = 22

18. (3)



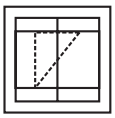
19. (1) II, III, IV and V are on the faces adjacent to I.

∴ VI lies opposite I.

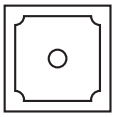
20. (1) Blue pens in rectangle & triangle = 4 + 19 = 23

21. (1)

22. (1)



23. (2)



24. (3)

25. (4) B → 10, 31, 02, **23**, 44

L → 20, 41, **32**, 03, 14

A → 00, 11, 42, 33, **24**

N → **55**, 96, 77, 68, 89

D → 85, **66**, 97, 88, 99

For given word BLAND, group of letters can be represented by the numbers → 23, 32, 24, 55, 66.

PART-II
(GENERAL AWARENESS)

26. (3) Reverse Repo Rate: It is the rate at which the Reserve Bank of India (RBI) borrows money from commercial banks within the country. It is a monetary policy instrument which can be used to control the money supply in the country.

27. (4) Extension of Supply: When the price of a commodity increases its quantity supplied also increases it is called the extension of supply and in opposite

process, when the price of commodity decreases, the quantity supplied of it also decreases it is called the Contraction of Supply. The supply keeps on fluctuating with changing prices. When there is an extension and contraction of supply then there will be movements along the same supply curve. This is primarily due to the fact that only the price factor causes these movements keeping all the other factors constant.

28. (2) The qualifications for Vice President of India:

– Must be a citizen of India.

– Must be over 35 years of age.

– Must not hold any office of profit.

– Must be qualified for election as a Member of the Rajya Sabha or the Council of States.

29. (4) Quo-Warranto: It is a writ issued with a view to restrain a person from holding a public office to which he is not entitled. The writ requires the concerned person to explain to the Court by what authority he holds the office. If a person has usurped a public office, the Court may direct him not to carry out any activities in the office or may announce the office to be vacant.

30. (1) Bindusara: He was the second Mauryan Emperor of India who ruled from (297–273 BC). Son of Chandragupta Maurya, the founder of the Mauryan dynasty. Chanakya remained the chief advisor of Bindusara.

31. (4) The Sayyid Dynasty: The dynasty was founded by a former governor of Multan, they succeeded the Tughlaq dynasty and ruled the sultanate until they were displaced by the Lodi dynasty. It was the fourth dynasty of the Delhi Sultanate, with four rulers ruling from 1414 to 1451.

32. (3) Pluto was reclassified from a planet to a dwarf planet in 2006. This is when the IAU formalised the definition of a planet as "A planet is a celestial body that (i) is in orbit around the Sun, (ii) has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape and (iii) has cleared the neighbourhood around its orbit."

33. (4) Sandstone: One of the most common types of sedimentary rock and is found in sedimentary basins throughout the world. It is often mined for use as a construction material or as a raw material used in manufacturing. In the sub-surface, sandstone often serves as an aquifer for groundwater or as a reservoir for oil and natural gas.

34. (2) Herb: It is a short plant with green, delicate stem without the woody tissues. Generally, they have few branches or branchless. These can be easily uprooted from the soil. They contain enough nutritional benefits and vitamins to make it a part of the diet. Few examples are tomato, wheat and grass.

35. (3) Reptiles are cold-blooded, egg laying vertebrates with scales or scutes rather than fur or feathers. They are a group of animals that include snakes, lizards, crocodiles, turtles and tuatara. The study of reptiles is known as herpetology which also includes the study of amphibians such as frogs and newts.

36. (4) Tensiometer: It is a measuring instrument used to determine the matric water potential (soil moisture tension) in the vadose zone. It is a device typically consists of a glass or plastic tube with a porous ceramic cup and is filled with water.

37. (3) The SI unit of force is the netwon, symbol (N). It is named after Isaac Newton in recognition of his work on classical mechanics, specifically Newton's second law of motion.

38. (3) Bad conductors are materials/matter that can conduct heat and electricity partially or in most cases, doesn't conduct heat and electricity at all. Bad (weak conductors) are usually non-metal elements and compounds such as water (H_2O), plastic and paper. Glass is not a good conductor of heat and electricity.

39. (4) Read-Only Memory (ROM): It a storage medium that is used with computers and other electronic devices. Data stored in ROM may only be read.

40. (3) Rusting is an example of a redox reaction. Iron and steel rust when they are in contact with oxygen and water. Rust prevention methods involve coating the metal object with oil, grease, paint, zinc or tin.

41. (3) Ions are atoms or molecules which have gained or lost one or more valence electrons giving the ion a net positive or negative charge. A cation has a net positive charge, and is attracted to the cathode (negative electrode) during electrolysis. Suplhate ion is not cation.

42. (2) Smog is made up of many chemicals including nitrogen oxides (NOx), sulphur dioxide (SOx), carbon monoxide (CO), and volatile organic compounds (VOCs), but the two main components of smog are particulate matter (PM) and ground-level ozone (O_3). They are very chemically reactive and are irritating to humans and other living things.

43. (3) The National Institution for Transforming India (NITI Aayog): It was formed by resolution of the Union Cabinet on 1 January, 2015 replacing Planning Commission. NITI Aayog is the premier policy of the Government of India, providing both directional and policy inputs. While designing strategic and long term policies and programmes for the Government of India, NITI Aayog also provides relevant technical advice to the Centre and States.

44. (3) T.H. Maiman: He was an American engineer and physicist credited with the building of the first working laser. Maiman's laser led to the subsequent development of many other types of lasers. The laser was successfully fired on 16 May, 1960.

45. (2) The Saurashtra Cricket Association ground in Rajkot hosted first ever Test match on 9 November, 2016, and became the 23rd test venue in India and 120th in the world.

46. (3)

Artist	Art Form
Gauri Shankar Devilal	Kathak
Hari Prasad Chaurasia	Flute
M.F. Hussain	Painting
Zakir Hussain	Tabla

47. (3) Virat Kohli was awarded with the Polly Umrigar Award on 8 March, 2017. He was also who received the award in 2011–12 and 2014–15 and becomes the first Indian cricketer to get it on the third occasion.

48. (1) The Sellout: Authored by Paul Beatty is the first book by an American author to win the UK's prestigious Man Booker Prize.

49. (3) USA designated India as the major defence partner in December, 2016. The designation as a Major Defence Partner is a status unique to India and institutionalises the progress made to facilitate defence trade and technology-sharing with India to a level at par with that of the United States' closest allies and partners, and ensures enduring cooperation into the future.

50. (3) EKUVERIN means friends in Maldivian language is the bilateral exercise between India and Maldives. The 7th edition of the exercise was held at Kadhdhoo on Lammu Atoll in the Maldives in December, 2016.

PART-III (QUANTITATIVE APTITUDE)

51. (1) $80 = 10 \times 8$

Clearly, 347 XY is divisible by 10.

So $Y = 0$

Now, 347 X 0 is divisible by 8. It means last three digits

7 X 0 is divisible by 8.

Hence, X = 2 or 6.

If X = 2, number 34720 which is divisible by 80.

If X = 6, number 34760 which is not divisible by 80.

$\therefore$ X + Y = 2 + 0 = 2

52. (3) Work will be completed = x days

According to question,

$$\frac{4}{20}+\frac{x-6}{24}+\frac{x}{30}=1$$

or, $$\frac{6\times4+5(x-6)+4x}{120}=1$$

or, $$24+5x-30+4x=120$$

or, $$9x=126$$

$\therefore$ $$x=14 \text{ days}$$

53. (3) Total surface area of sphere $= 4\pi r^2$

Total surface area of hemisphere $= 3\pi r^2$

The increase in the total surface area

$= 2 \times 3\pi r^2 - 4\pi r^2$

$= 2\pi r^2 = 2 \times \frac{22}{7} \times \left(\frac{17.5}{2}\right)^2$

$= 481.25 \text{ cm}^2$

54. (2) Marked price of the article

$$= 3168 \times \frac{100}{66} = ₹\ 4{,}800$$

55. (3) $\frac{3}{7}P = \frac{4}{11}Q$

or, $$\frac{P}{Q}=\frac{4}{11}\times\frac{7}{3}$$

or, $$\frac{P}{Q}=\frac{28}{33}$$

$$P : Q = 28 : 33$$

56. (2) Value of 9th result

$= 9 \times 57 + 9 \times 65 - 17 \times 60$

$= 513 + 585 - 1020$

$= 1098 - 1020 = 78$

57. (4) The cost price of the article

$= ₹\ 100$

The selling price of the article

$$= 100 \times \frac{270}{100} = ₹\ 270$$

New cost price of the article

$$= 100 \times \frac{120}{100} = ₹\ 120$$

New profit percentage

$$= \frac{270-120}{120} \times 100$$

$= 125\%$

58. (4) Number = x

According to question,

$$x \times \frac{32}{100} - x \times \frac{17}{100} = 120$$

$\Rightarrow$ $$\frac{15x}{100}=120$$

$\therefore$ $$x = 800$$

59. (3) Speed of boat in downstream = x

Speed of boat in upstream = y

According to question,

$$\frac{21}{2x}+\frac{15}{y}=3\frac{1}{4}=\frac{13}{4} \quad \text{... (i)}$$

$$\frac{14}{x}+\frac{12}{y}=3 \quad \text{... (ii)}$$

On solving equations (i) and (ii)

$$x = 14,\ y = 6$$

Speed of boat in still water

$$=\frac{14+6}{2}=\frac{20}{2}$$

$= 10$ km/h

60. (1) Sum lent = ₹ x

According to question,

$$x-\frac{x\times5\times15}{100}=250$$

$$100x - 75x = 250 \times 100$$

$$25x = 250 \times 100$$

$$x = ₹\ 1{,}000$$

61. (1) $x = \frac{2+\sqrt{3}}{2-\sqrt{3}}$

$$x=\frac{2+\sqrt{3}}{2-\sqrt{3}}\times\frac{2+\sqrt{3}}{2+\sqrt{3}}$$

$$=\frac{(2+\sqrt{3})^2}{(2)^2-(\sqrt{3})^2}$$

$$x=\frac{4+3+4\sqrt{3}}{4-3}=7+4\sqrt{3}$$

$$\frac{1}{x}=\frac{1}{7+4\sqrt{3}}\times\frac{7-4\sqrt{3}}{7-4\sqrt{3}}$$

$$\frac{1}{x}=7-4\sqrt{3}$$

$$x+\frac{1}{x}=7+4\sqrt{3}+7-4\sqrt{3}$$

$= 14$

62. (3) $x = 2 + \sqrt{3}$

$$\sqrt{2x}=\sqrt{2(2+\sqrt{3})}$$

$$=\sqrt{4+2\sqrt{3}}$$

$$\sqrt{2x}=\sqrt{1+3+2\sqrt{3}}$$

$$=\sqrt{(1+\sqrt{3})^2}$$

$$\sqrt{2x}=1+\sqrt{3}$$

$$\frac{1}{\sqrt{2x}}=\frac{1}{1+\sqrt{3}}\times\frac{1-\sqrt{3}}{1-\sqrt{3}}$$

$$=\frac{1-\sqrt{3}}{1-3}$$

$$\frac{1}{\sqrt{2x}}=\frac{-1+\sqrt{3}}{2}$$

$$\sqrt{2x}+\frac{1}{\sqrt{2x}}=1+\sqrt{3}+\frac{[-1+\sqrt{3}]}{2}$$

$$=\frac{2+2\sqrt{3}-1+\sqrt{3}}{2}$$

$$=\frac{1+3\sqrt{3}}{2}$$

63. (4) $x+\frac{1}{x}=4$

$$x^2+\frac{1}{x^2}+2=16$$

$$x^2+\frac{1}{x^2}=14$$

$$x^6+\frac{1}{x^6}+3\times(14)=2744$$

$$x^6+\frac{1}{x^6}=2702$$

64. (3) $y=\frac{2-x}{1+x}$

$$\frac{1}{y+1}+\frac{2y+1}{y^2-1}=\frac{1}{\frac{2-x}{1+x}+1}$$

$$+\frac{2\left[\frac{2-x}{1+x}\right]+1}{\left[\frac{2-x}{1+x}\right]^2-1}=\frac{1+x}{2-x+1+x}$$

$$+\frac{(4-2x+1+x)}{(4+x^2-4x-1-x^2-2x)}$$

$$\times\frac{(1+x)^3}{(1+x)}$$

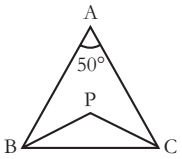
$$=\frac{1+x}{3}+\frac{(5-x)(1+x)}{3-6x}$$

$$=\frac{1+x}{3}\left[\frac{1-2x+5-x}{1-2x}\right]$$

$$=\frac{(1+x)}{3}\frac{[6-3x]}{(1-2x)}$$

$$=\frac{(1+x)(2-x)}{(1-2x)}$$

65. (3) $\angle BAC=50°$

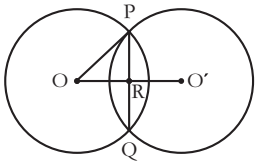


$$\angle BPC=90°+\frac{50°}{2}$$

$$=90°+25°$$

$$=115°$$

66. (1) PQ = 30 cm



$$PR=\frac{PQ}{2}=\frac{30}{2}=15\text{ cm}$$

$$OO'=40\text{ cm}$$

$$OR=\frac{OO'}{2}=\frac{40}{2}$$

$$=20\text{ cm}$$

In ΔOPR,

$$OP=\sqrt{(OR)^2+(PR)^2}$$

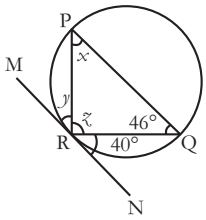
$$=\sqrt{(20)^2+(15)^2}$$

$$OP=\sqrt{400+225}=\sqrt{625}$$

$$OP=25\text{ cm}$$

67. (1) $\angle QRN=40°$

$\angle RPQ=\angle QRN$



$x=40°$

$\angle PQR=46°$

$\angle MRP=\angle PQR$

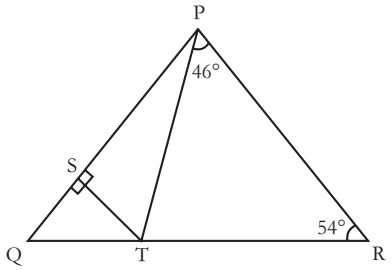
$y=46°$

$z=180°-40°-46°$

$z=94°$

68. (2) $\angle PTR=180°-(46°+54°)=80°$

$\angle PTQ=180°-80°=100°$



$\Delta QST\cong\Delta PST$

Let, $\Delta STQ=\angle PTS=x$

$x+x=100°$

$\Rightarrow\quad x=50°$

Exterior angle = some of other two interior angles

$\angle PQR=180°-(90°+50°)$

$=180°-140°=40°$

69. (1) $\frac{\cot A+\tan B}{\cot B+\tan A}=\frac{\frac{\cos A}{\sin A}+\frac{\sin B}{\cos B}}{\frac{\cos B}{\sin B}+\frac{\sin A}{\cos A}}$

$$=\frac{\frac{\cos A\cos B+\sin A\sin B}{\sin A\cos B}}{\frac{\cos A\cos B+\sin A\sin B}{\sin B\cos A}}$$

$$=\frac{\sin B\cos A}{\cos B\sin A}=\tan B\cot A$$

70. (2) $\left[\frac{1}{\text{cosec}\,A+\cot A}\right]^2$

$$=\left[\frac{1}{\frac{1}{\sin A}+\frac{\cos A}{\sin A}}\right]^2$$

$$=\left[\frac{\sin A}{1+\cos A}\right]^2$$

$$=\frac{\sin^2 A}{(1+\cos A)^2}=\frac{1-\cos^2 A}{(1+\cos A)^2}$$

$$=\frac{(1-\cos A)(1+\cos A)}{(1+\cos A)^2}$$

$$=\frac{1-\cos A}{1+\cos A}$$

71. (2) $\cos^2\theta-\sin\theta=\frac{1}{4}$

$$1-\sin^2\theta-\sin\theta=\frac{1}{4}$$

$$4-4\sin^2\theta-4\sin\theta=1$$

$$4\sin^2\theta+4\sin\theta-3=0$$

$$4\sin^2\theta+6\sin\theta-2\sin\theta-3=0$$

$$2\sin\theta[2\sin\theta+3]-1[2\sin\theta+3]=0$$

$$(2\sin\theta+3)(2\sin\theta-1)=0$$

$$2\sin\theta-1=0$$

$$\sin\theta=\frac{1}{2}$$

72. (3) Required percentage increase

$$=\frac{168-148}{148}\times100=13.51\%$$

73. (2) Simple annual growth rate = r%

According to question,

$$\frac{32\times r\times4}{100}=48-32$$

or, $$r=\frac{16\times100}{32\times4}$$

$\therefore\quad r=12.5\%$

74. (1) Required ratio

$$=\left[\frac{48+56+64+78+92}{5}\right]:$$

$\left[\frac{105 + 123 + 125 + 148 + 161}{5}\right]$

= 338 : 662

= 169 : 331

75. (3) Total number of students in 2014

= 64 + 125 + 144 + 36

= 369

Total number of students in 2015

= 78 + 148 + 156 + 36

= 418

Percentage increase

$= \frac{418 - 369}{369} \times 100$

= 13.27%

PART-IV (ENGLISH LANGUAGE)

76. (2) In the given sentence, part (2) has an error. To correct the sentence use 'each other' in place of 'one another'.

77. (3) In the given sentence, part (3) has an error. To correct the sentence use 'all countries' in place of 'all other countries'.

78. (2) Simple Present Tense will be used on both sides of the sentence.

Becomes → present tense, singular verb

79. (3) Present Perfect Continuous

Since → point of time (since morning/2002/evening/yesterday etc.

80. (3) **Opulent/Rich (Adjective):** Luxurious; palatial; lush

Sentence → The opulent comfort of a Ferrari.

81. (2) **Morose/Gloomy (Adjective):** depressing; dismal; unwelcoming.

Sentence → A gloomy corridor badly lit by oil lamps.

82. (4) Opposite of Irk is

Please (Verb): cause to feel happy and satisfied.

Sentence → I feel pleased to have been invited to the exhibition.

83. (3) Opposite of Grotesque is

Plain (Adjective): simple; ordinary

Sentence → Undecorated good plain food.

84. (1) **Avoid Starvation**

Sentence → I work part-time to pay the mortgage and keep the wolf from the door.

85. (2) Problems at the start of a new project

Sentence → The inevitable teething troubles of a new system should be tackled carefully.

86. (2) For improvement of sentence use 'nor did I' in place of 'nor I did'.

87. (2) For improvement of sentence use 'a monument worth seeing' in place of 'a worth seeing monument'.

88. (3) Best substitute of the phrase is

In Corrigible (Adjective): beyond correction, impossible to improve or correct.

Sentence → An incorrigible behaviour is bad and impossible to change or improve.

89. (4) Best substitute of the phrase is

Scapegoat (Noun): one that bears the blame for others.

Sentence → The Engineer was made the scapegoat for the project's failures.

90. (3) Correctly spelt word → Niece.

91. (1) Correctly spelt word → Dictionary.

92. (3) Logical order of the sentences to form a coherent paragraph → QSRP

93. (3) Logical order of the sentences to form a coherent paragraph → QSPR.

94. (3) Passive voice to Active voice the sentence is → Even an ant may help an elephant.

95. (2) Direct speech of an imperative sentence is → He begged me not to cry.

96. (2) Best option for blank → **Effectiveness (Noun):** success; efficacy; productiveness.

97. (2) Best option for blank → **Preceding (Verb):** coming before.

98. (2) Best option for blank → **Fit into something (Phrasal Verb):** to seem to be the right place for something.

99. (4) Best option for blank → **Seldom (Adverb):** not often; rarely.

100. (2) Best option for blank → **Capacity (Noun):** the ability/power to do or understand something.

❑❑❑

21

SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 10 September, 2016

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): In each of the following questions select the related letters/word/number from the given alternatives.

1. Cot : Mattress : : Floor : ?
(1) Curtain (2) Bedspread
(3) Tiles (4) Carpet

2. Salt : Hypertension : : Sugar : ?
(1) Cholesterol (2) Diabetes
(3) Sweet (4) Dehydration

3. 24 : 60 : : 210 : ?
(1) 505 (2) 425
(3) 420 (4) 525

Directions (4–6): In each of the following questions, select the one which is different from the other three responses.

4. (1) Jasmine (2) Sunflower
(3) Lotus (4) Rose flower

5. (1) Mumbai (2) Chennai
(3) Kolkata (4) Bangalore

6. (1) 100 (2) 121
(3) 125 (4) 144

7. Find out the wrong number in the given sequence of numbers
22, 33, 66, 99, 121, 279 594
(1) 33 (2) 121
(3) 279 (4) 594

Directions (8–9): In each of the following questions, which one of the given responses would be a meaningful order of the following?

8. 1. soil 2. sapling
3. flower 4. fruit
5. plant 6. seed
(1) 1, 2, 3, 4, 5, 6 (2) 1, 6, 2, 5, 4, 3
(3) 5, 6, 1, 2, 3, 4 (4) 1, 6, 2, 5, 3, 4

9. 1. Probation 2. Advertisement
3. Application 4. Selection
5. Interview 6. Appointment
(1) 1, 2, 3, 4, 5, 6 (2) 1, 2, 3, 5, 4, 6
(3) 2, 3, 5, 4, 6, 1 (4) 6, 5, 4, 3, 2, 1

Directions (10–14): In each of the following questions, a series is given, with one term/number/letter missing. Choose the correct alternative from the given ones that will complete the series.

10. QPO, NML, KJI, ?, EDC
(1) HGF (2) CAB
(3) JKL (4) GHI

11. QAR, RAS, SAT, TAU, ?
(1) UAV (2) UAT
(3) TAS (4) TAT

12. 36, 34, 30, 28, 24, ?
(1) 20 (2) 22
(3) 23 (4) 26

13. 1000, 200, 40, ?
(1) 10 (2) 20
(3) 15 (4) 8

14. 4320, 720, ?, 36, 12, 6
(1) 144 (2) 24
(3) 72 (4) 48

15. Arrange the following words according to dictionary:
1. Brush 2. Bread
3. Broad 4. Border
5. Butter
(1) 4, 1, 2, 3, 5 (2) 4, 2, 3, 1, 5
(3) 4, 2, 1, 3, 5 (4) 4, 3, 2, 1, 5

16. Number of letters skipped in between adjacent letters in the series increases by one. Which of the following series observe the ruling?
(1) ACFJNS (2) EGJNSY
(3) CEHLPS (4) KNQTWZ

Directions (17–18): In each of the following questions, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?

17. p_ _p _ _p q r p _ r
(1) q r s t q (2) q q r r q
(3) q r q r q (4) q q r q r

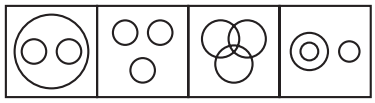
18. _ acca _ ccca _ acccc _ aaa
(1) a c c a (2) c a a a
(3) c c a a (4) c a a c

Directions (19–20): In each of the following questions, from the given alternatives select the word which **can not** be formed using the letters of the given word.

19. FRAMEWORK
(1) MARK (2) FAME
(3) FOUR (4) MORE

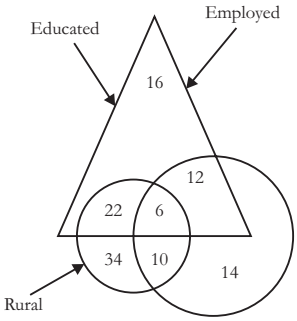
20. IMPRESSIONABLE
A. IMPORT B. MOBILE
C. LESSON D. ASPIRE

21. Indicate which figure will best represent the relationship among Birds, Crows, Eagles.



(1) (2) (3) (4)

22.

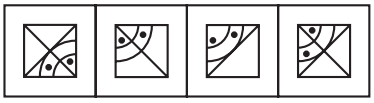


How many rural uneducated people are employed?
(1) 10 (2) 6
(3) 12 (4) 14

23. Which answer figure will complete the pattern in the question figure?

Question Figure

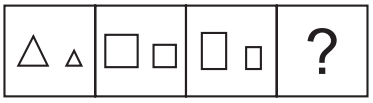
Answer Figures



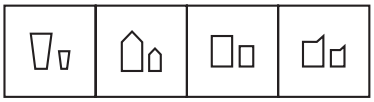
(1) (2) (3) (4)

24. Which figure will come next?

Question Figure



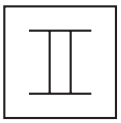
Answer Figures



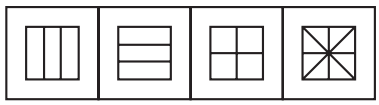
(1) (2) (3) (4)

Directions: From the given answer figures, select the one in which the question figure is hidden/embedded.

25. **Question Figure**



Answer Figures



(1) (2) (3) (4)

PART-II
(GENERAL AWARENESS)

26. Where is 'Raisina Hills'?
(1) Where Rashtrapati Bhavan is situated
(2) The Hill feature in Srinagar, otherwise known as 'Shankaracharya Hill'
(3) The place where the Dogra rulers of J & K built their fort in Jammu.
(4) The rock feature at Kanyakumari where Swami Vivekananda's statue was erected.

27. Who is the author of the book 'Courts and Their Judgements'?
(1) Justice V.R. Krishna Iyer
(2) Arun Shourie
(3) F. S. Nariman
(4) Ram Jethmalani

28. The standard of living in a country is represented by its:
(1) Poverty ratio
(2) Per capita income
(3) National income
(4) Unemployment rate

29. Cement is made hard by:
(1) Dehydration
(2) Hydration and dissociation of water
(3) Dissociation of water
(4) Polymerisation

30. Who established Nalanda Mahavihara?
(1) Kumargupta I
(2) Devgupta
(3) Skandgupta
(4) Vedgupta

31. Which one of the following libraries has the largest collection of manuscripts of historical value?
(1) Khuda Bakhsh Oriental Public Library
(2) Tanjavur Maharaja Serfoji Saraswati Mahal Library
(3) Asiatic Society Library
(4) Rampur Raza Library

32. Who built the Khajuraho temples?
(1) Holkars
(2) Scindias
(3) Bundela Rajputs
(4) Chandela Rajputs

33. Where did Lord Buddha breathe his last?
(1) Rajgir (2) Bodh Gaya
(3) Sarnath (4) Kushinagar

34. Where was the first cotton mill in India established?
(1) Surat (2) Mumbai
(3) Ahmedabad (4) Coimbatore

35. The 'Vijay Stambha' (Tower of Victory) at Chittor was built by—
(1) Rana Pratap (2) Rana Kumbha
(3) Rana Sanga (4) Bappa Raval

36. Who discovered sex hormones?
(1) Dreser
(2) Eugen Steinach
(3) Edward Calvin
(4) Samuel Cohen

37. Who was the first Ramon Magsaysay Award winner from India?
(1) C. D. Deshmukh
(2) Jayaprakash Narayan
(3) Dr. Verghese Kurien
(4) Acharya Vinoba Bhave

38. Fermentation is a process of decomposition of an organic compound by:
(1) Catalysts (2) Enzymes
(3) Carbanions (4) Free radicals

39. When there are two electrons in the same orbital, they have:
(1) Same spin
(2) Opposite spin
(3) Same or opposite spin
(4) No spin

40. Galvanization is the:
(1) Deposition of zinc on iron
(2) Deposition of tin on iron
(3) Deposition of copper on iron
(4) Deposition of aluminium on iron

41. What are the basic units from which human spare parts can be created?
(1) Nerve cells (2) Stem cells
(3) Heart cells (4) Kidney cells

42. Which countries are linked by the Khyber Pass?
(1) India and Pakistan
(2) India and Afghanistan
(3) Afghanistan and Pakistan
(4) Afghanistan and Tajikistan

43. Who designed the St. Peter's Square?
(1) Leonardo da Vinci
(2) Michelangelo
(3) Bernini
(4) Borromini

44. Authors in English from which of the following countries are not eligible to be considered for the Booker Prize?
(1) Britain
(2) Commonwealth
(3) Republic of Ireland
(4) USA

45. Who has provided the Savings Bank facility to the largest number of account-holders in India?
(1) State Bank of India
(2) Punjab National Bank
(3) Allahabad Bank
(4) Post Office

46. Who among the following was the last Delhi Sultan?
(1) Sikandar Lodi
(2) Daulat Khan Lodi
(3) Rana Sanga
(4) Ibrahim Lodi

47. Which State in India is estimated to have the largest coal reserves in India?
(1) Telangana
(2) Jharkhand
(3) Madhya Pradesh
(4) Odisha

48. Who appoints the Chief Election Commissioner of India?
(1) Chief Justice of India
(2) President
(3) Parliament
(4) Prime Minister

49. The policy of racial discrimination followed in South Africa was called:
(1) Non-Aligned
(2) Civil Rights Movement
(3) Apartheid
(4) Suffrage

50. Who were the first kings to issue gold coins in India?
(1) Mauryas (2) Indo-Greeks
(3) Guptas (4) Kushans

PART-III (QUANTITATIVE APTITUDE)

51. If θ is a positive acute angle and $\tan 2\theta \tan 3\theta = 1$, then the value of $(2\cos^2\frac{5\theta}{2} - 1)$ is
(1) $-\frac{1}{2}$ (2) 1
(3) 0 (4) $\frac{1}{2}$

52. Two right circular cylinders of equal volume have their heights in the ratio 1 : 2. The ratio of their radii is:
(1) $\sqrt{2}$: 1 (2) 2 : 1
(3) 1 : 2 (4) 1 : 4

53. If the incentre of an equilateral triangle lies inside the triangle and its radius is 3 cm, then the side of the equilateral triangle is
(1) $9\sqrt{3}$ cm (2) $6\sqrt{3}$ cm
(3) $3\sqrt{3}$ cm (4) 6 cm

54. A is thrice as good a workman as B and therefore, able to finish a job in 60 days less than B. Working together they will do it in:
(1) 20 days (2) $22\frac{1}{2}$ days
(3) 25 days (4) 30 days

55. If $\left(x+\frac{1}{x}\right)^2 = 3$, then the value of $(x^{72} + x^{66} + x^{54} + x^{36} + x^{24} + x^6 + 1)$ is
(1) 1 (2) 2
(3) 3 (4) 4

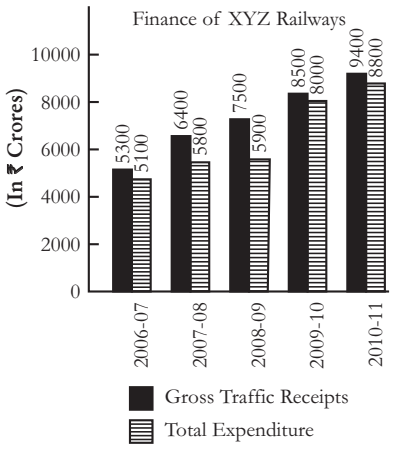
56. If 6 men and 8 boys can do a piece of work in 10 days and 26 men and 48 boys can do the same in 2 days, the time taken by 15 men and 20 boys to do the same type of work will be:
(1) 5 days (2) 4 days
(3) 6 days (4) 7 days

57. If a man walks 20 km at 5 km/hr, he will be late by 40 minutes. If he walks at 8 km per hour, how early from the fixed time will he reach?
(1) 15 minutes (2) 25 minutes
(3) 50 minutes (4) $1\frac{1}{2}$ hours

58. If $\sin 17° = \frac{x}{y}$, then the value of $(\sec 17° - \sin 73°)$ is
(1) $\frac{y^2}{x\sqrt{y^2-x^2}}$ (2) $\frac{x^2}{y\sqrt{y^2-x^2}}$
(3) $\frac{x^2}{y\sqrt{x^2-y^2}}$ (4) $\frac{y^2}{x\sqrt{x^2-y^2}}$

59. AD, BE and CF are the medians and G is the centroid of ΔABC. If BE = CF then what type of ΔABC is?
(1) Scalene (2) Isosceles
(3) Equilateral (4) None of these

Directions (60–64): The following questions are based on the following bar graph. Read the graph and answer the questions.



60. What is the percentage increase in the gross traffic receipts in 2008–09 as compared to 2006–07?
(1) 33.9% (2) 41.5%
(3) 20.7% (4) 17%

61. If profit = gross traffic receipts — total expenditure, then in 2009–10, what percentage of gross traffic receipts is the profit made?
(1) 5.9% (2) 6.4%
(3) 7.2% (4) 8%

62. In which year was the profit as a percentage of gross traffic receipts the highest?
(1) 2010–11 (2) 2009–10
(3) 2008–09 (4) 2007–08

63. In order to make a profit of 10%. What should have been the gross traffic receipts (in ₹ crores) in 2007–08, total expenditure remaining the same?
(1) 5,667 (2) 5,876
(3) 6,444 (4) 7,667

64. By what amount (in ₹ crores) has the expenditure increased over the period 2006–07 to 2010–11?
(1) 4,100 (2) 3,900
(3) 3,850 (4) 3,700

65. Simplify: $1+\cfrac{1}{1+\cfrac{2}{2+\cfrac{3}{1+\cfrac{4}{5}}}}$

(1) $1\frac{11}{17}$ (2) $1\frac{5}{7}$

(3) $1\frac{6}{17}$ (4) $1\frac{11}{17}$

66. Assume that

$\sqrt{13}$ = 3.605 (approximately)

$\sqrt{130}$ = 11.40 (approximately)

Find the value of:

$\sqrt{13}+\sqrt{1300}+\sqrt{0.013}$

(1) 36.164 (2) 37.304

(3) 36.304 (4) 37.164

67. Suppose ΔABC be a right- angled triangle where ∠A = 90° and AD ⊥ BC. If ΔABC = 40 cm^2, ΔACD = 10 cm^2 and $\overline{AC}$ = 9 cm, then the length of BC is

(1) 12 cm (2) 18 cm

(3) 4 cm (4) 6 cm

68. The value of

$\sqrt{5+2\sqrt{6}}-\cfrac{1}{\sqrt{5+2\sqrt{6}}}$ is

(1) $2\sqrt{2}$ (2) $2\sqrt{3}$

(3) $1+\sqrt{5}$ (4) $\sqrt{5}-1$

69. If $a+b+c=0$, then the value of $\cfrac{a^2+b^2+c^2}{a^2-bc}$ is

(1) 0 (2) 1

(3) 2 (4) 3

70. Which of the following statements are true regarding the polygons?

I. Interior angle of a regular pentagon is three times the exterior angles of a regular decagon.

II. In a convex hexagon the sum of all interior angles is equal to twice the sum of its exterior angles formed by producing the sides in the same order.

III. The number of diagonals of a polygon of n sides = $\cfrac{n(n-1)}{2}-n$.

(1) I is true

(2) I and III are true

(3) II and III are true

(4) All of these

71. In a right-angled triangle XYZ, right-angled at Y, if XY = $2\sqrt{6}$ and XY – YZ = 2, then sec X + tan X is

(1) $\cfrac{1}{\sqrt{6}}$ (2) $\sqrt{6}$

(3) $2\sqrt{6}$ (4) $\cfrac{\sqrt{6}}{2}$

72. If $a * b = 2a - 3b + ab$, then 3 * 5 + 5 * 3 is equal to:

(1) 22 (2) 24

(3) 26 (4) 28

73. Simplify: $\left[\sqrt[3]{6\sqrt{5^9}}\right]^4\left[\sqrt[3]{6\sqrt{5^9}}\right]^4$

(1) 5^2 (2) 5^4

(3) 5^8 (4) 5^{12}

74. Two circles touch each other externally at P. AB is a direct common tangent to the two circles, A and B are points of contact and ∠PAB = 35°. Then ∠ABP is

(1) 35° (2) 55°

(3) 65° (4) 75°

75. If $a+b+c=6$, $a^2+b^2+c^2=14$ and $a^3+b^3+c^3=36$, then the value of abc is

(1) 3 (2) 6

(3) 9 (4) 12

PART-IV (ENGLISH LANGUAGE)

Directions (76–80): Read each sentence to find out whether there is any grammatical error or idiomatic error in it. The error, if any, will be in one part of the sentence. The number of that part is the answer. If there is no error, the answer is (4). (Ignore errors of punctuation, if any.)

76. Hostility between the (1)/ two groups have (2)/ increased in the past few months. (3)/ No error (4)

77. Her class is very special because it has children (1)/ with many different (2)/ abilities and skills. (3)/ No error (4)

78. Many peoples were (1)/ brought to safety (2)/ by the army helicopters from the flood hit area. (3)/ No error (4)

79. It is difficult to understand the problems (1)/ that the physically challenged people (2)/ encounters in their daily life. (3)/ No error (4)

80. I had gone only a little way down the street (1)/ when I realised that (2)/ I had not lock the door. (3)/ No error (4)

Directions (81–85): In the following questions you have a passage. In the passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, four words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

Once upon a time, there was a huge tree on the **(81)** of a river. The tree made a comfortable home for the family of birds who had built their nests on its branch. The birds were living there happily as the tree with its widespread branches provided **(82)** to them from scorching sun and heavy rains.

One day, when the sky was overcast, it rained very heavily. Some monkeys, who were playing nearby the tree, got drenched and ran for shelter under the tree. All of them were **(83)** with cold. When the birds saw the monkeys in a pitiable condition, one of the birds said, "O Monkeys! If we can, build our nest with small beaks, then why can't you. By God's grace, you have two hands and two legs. Why don't you make a nice shelter for yourselves?

On hearing this, the monkeys got **(84)** and swore to teach the birds a lesson. They said to themselves, "These birds are not afraid of the rain or of cold wind. They are living comfortably that is why they are criticising us like this. Let the rain stopped, we'll show them how to build home". As soon as the rain stopped, the monkeys climbed up the tree and destroyed the nests of the birds. They also broke the birds' eggs and threw the young ones down.

The poor birds flew here and there in misery. They were full of **(85)** for their words and realized that they should not have given advice that was not asked for. Advice should only be given to the learned, the wise and those who ask for it.

81. (1) Waters (2) Middle
(3) Bank (4) Bottom

82. (1) Shelter (2) House
(3) Habitat (4) Filter

83. (1) Shaking (2) Wet
(3) Angry (4) Shivering

84. (1) Inspired (2) Sorry
(3) Annoyed (4) Defensive

85. (1) Regret (2) Pride
(3) Pleasure (4) Hatred

Directions (86–90): In the following questions, a part of the sentence is printed in **bold**. Below are given alternatives to the **bold** part at (1), (2) and (3) which may improve the sentence. Choose the correct alternative. In case no improvement is needed your answer is (4).

86. My teacher is the **kinder** of all.
(1) Kind
(2) Kindly
(3) Kindest
(4) No improvement

87. The accident occurred in the **centre** of the road.
(1) Middle
(2) Path
(3) Way
(4) No improvement

88. Hardly had I reached the station **when** the train started.
(1) Then
(2) Than
(3) Since
(4) No improvement

89. He is **wilful** to help you.
(1) Willingly
(2) Willing
(3) Wilfully
(4) No improvement

90. His father **died** when he was very young.
(1) Broke down
(2) Passed away
(3) Took off
(4) No improvement

Directions (91–95): In the following questions a group of four words are given. In each group one word is misspelt. Find the misspelt word.

91. (1) Amicable (2) Practicable
(3) Managable (4) Lamentable

92. (1) Callous (2) Querulous
(3) Libelous (4) Perilous

93. (1) Homespun (2) Homecide
(3) Homily (4) Homely

94. (1) Galaxy (2) Gale
(3) Gallop (4) Galant

95. (1) Cottage
(2) Privilage
(3) Cartilage
(4) College

Directions (96–100): Out of the four alternatives, choose the one which can be **substituted for the given words/ sentence.**

96. One who knows many languages.
(1) Linguist
(2) Polyglot
(3) Translator
(4) Phonetician

97. One who does not follow the usual rules of social life.
(1) Bohemian
(2) Artisan
(3) Partisan
(4) Physician

98. Placing a thing beside another.
(1) Impose
(2) Repose
(3) Juxtapose
(4) Expose

99. To throw or drop unnecessary goods or fuel from a ship, an aircraft, a spacecraft etc.
(1) Capsize (2) Enthral
(3) Volley (4) Jettison

100. Wild and noisy disorder
(1) Agitation
(2) Revolution
(3) Pandemonium
(4) Stir

Short Answers

1. (4)	**2.** (2)	**3.** (4)	**4.** (3)	**5.** (4)	**6.** (3)	**7.** (3)	**8.** (4)	**9.** (3)	**10.** (1)
11. (1)	**12.** (2)	**13.** (4)	**14.** (1)	**15.** (2)	**16.** (2)	**17.** (3)	**18.** (2)	**19.** (3)	**20.** (1)
21. (1)	**22.** (1)	**23.** (2)	**24.** (2)	**25.** (1)	**26.** (1)	**27.** (2)	**28.** (2)	**29.** (2)	**30.** (1)
31. (1)	**32.** (4)	**33.** (4)	**34.** (2)	**35.** (2)	**36.** (2)	**37.** (4)	**38.** (2)	**39.** (2)	**40.** (1)
41. (2)	**42.** (3)	**43.** (3)	**44.** (4)	**45.** (4)	**46.** (4)	**47.** (2)	**48.** (2)	**49.** (3)	**50.** (2)
51. (3)	**52.** (1)	**53.** (2)	**54.** (2)	**55.** (1)	**56.** (2)	**57.** (3)	**58.** (2)	**59.** (2)	**60.** (2)
61. (1)	**62.** (4)	**63.** (3)	**64.** (4)	**65.** (1)	**66.** (2)	**67.** (2)	**68.** (1)	**69.** (3)	**70.** (4)
71. (2)	**72.** (1)	**73.** (2)	**74.** (2)	**75.** (2)	**76.** (2)	**77.** (2)	**78.** (1)	**79.** (3)	**80.** (3)
81. (3)	**82.** (1)	**83.** (4)	**84.** (3)	**85.** (1)	**86.** (3)	**87.** (1)	**88.** (4)	**89.** (2)	**90.** (2)
91. (3)	**92.** (3)	**93.** (2)	**94.** (4)	**95.** (2)	**96.** (1)	**97.** (1)	**98.** (1)	**99.** (4)	**100.** (3)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (4) Mattress is spread over cot. Similarly, carpet is spread over floor.

2. (2) The excess intake of salt causes hypertension. Similarly, high sugar in blood causes diabetes.

3. (4) $24 \times 2.5 = 60$
Similarly, $210 \times 2.5 = 525$

4. (3) Lotus is grown in muddy water.

5. (4) Except Bangalore, all others are capital cities as well as ports.

6. (3) Except 125, all other numbers are perfect squares. 125 is a perfect cube.
$(10)^2 = 100$
$(11)^2 = 121$
$(12)^2 = 144$
But, $125 = (5)^3$

7. (3) Except the number 279, all other numbers are completely divisible by 11.

$\frac{22}{11} = 2$; $\frac{33}{11} = 3$;

$\frac{66}{11} = 6$; $\frac{99}{11} = 9$;

$\frac{121}{11} = 11$; $\frac{594}{11} = 54$

But, $\frac{279}{11} = 25.36$

8. (4) Meaningful order of words:
1. Soil
↓
6. Seed
↓
2. Sapling
↓
5. Plant
↓
3. Flower
↓
4. Fruit

9. (3) Meaningful order of words:
2. Advertisement
↓
3. Application
↓
5. Interview
↓
4. Selection
↓
6. Appointment
↓
1. Probation

10. (1) $Q \xrightarrow{-3} N \xrightarrow{-3} K \xrightarrow{-3} H \xrightarrow{-3} E$
$P \xrightarrow{-3} M \xrightarrow{-3} J \xrightarrow{-3} G \xrightarrow{-3} D$
$O \xrightarrow{-3} L \xrightarrow{-3} I \xrightarrow{-3} F \xrightarrow{-3} C$

11. (1) $Q \xrightarrow{+1} R \xrightarrow{+1} S \xrightarrow{+1} T \xrightarrow{+1} U$
$A \longrightarrow A \longrightarrow A \longrightarrow A \longrightarrow A$
$R \xrightarrow{+1} S \xrightarrow{+1} T \xrightarrow{+1} U \xrightarrow{+1} V$

12. (2) 36 34 30 28 24 [22]
(−2, −4, −2, −4, −2)

13. (4) $1000 \div 5 = 200$
$200 \div 5 = 40$
$40 \div 5 = 8$

14. (1) $4320 \div 6 = 720$
$720 \div 5 = \boxed{144}$
$144 \div 4 = 36$
$36 \div 3 = 12$
$12 \div 2 = 6$

15. (2) Arrangement of words as per dictionary:
4. Border
↓
2. Bread
↓
3. Broad
↓
1. Brush
↓
5. Butter

16. (2) $A \xrightarrow{+2} C \xrightarrow{+3} F \xrightarrow{+4} J \xrightarrow{+4} N \xrightarrow{+5} S$
$\boxed{E \xrightarrow{+2} G \xrightarrow{+3} J \xrightarrow{+4} N \xrightarrow{+5} S \xrightarrow{+6} Y}$
$C \xrightarrow{+2} E \xrightarrow{+3} H \xrightarrow{+4} L \xrightarrow{+4} P \xrightarrow{+3} S$
$K \xrightarrow{+3} N \xrightarrow{+3} Q \xrightarrow{+3} T \xrightarrow{+3} W \xrightarrow{+3} Z$

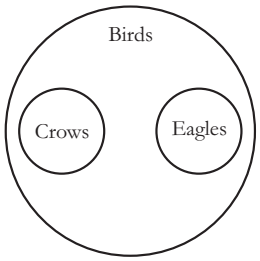
17. (3) *p* [*q*] [*r*] / *p* [*q*] [*r*] / *pqr* / *p q* [*r*]

18. (2) [*c*] *a* / *cca* [*a*] / *ccca* [*a*] *a* / *cccc* [*a*] *aaa*

19. (3) There is no 'U' letter in the given word. Therefore, the word FOUR cannot be formed.

20. (1) There is no 'T' letter in the given word. Therefore, the word IMPORT cannot be formed.

21. (1) Crow is different from Eagle. But, both comes under the class bird.



22. (1) Rural uneducated people has been represented by '10'.

23. (2) Answer figure (2), complete the pattern given in the question figure.

24. (2) In each subsequent figure two similar designs of varying size are given. The number of sides in the design increases gradually.

25. (1) Question figure is hidden in the answer figure (1).

PART-II
(GENERAL AWARENESS)

26. (1) Raisina Hills, is an area of Lutyens' Delhi, New Delhi, housing India's most important government buildings, including Rashtrapati Bhavan, the official residence of the President of India and the Secretariat building housing the Prime Minister's Office and several other important ministries. It is surrounded by other important buildings and structures, including the Parliament of India, Rajpath and India Gate.

27. (2) Arun Shourie is the author of the book 'Courts and Their Judgements'.

28. (2) The generally accepted measure of the standard of living is GDP per capita. This is a nation's gross domestic product divided by its population. The GDP is the total output of goods and services produced in a year by everyone within the country's borders.

29. (2) Cement starts to set when mixed with water, which causes a series

of hydration chemical reactions. The constituents slowly hydrate and the mineral hydrates solidify. The interlocking of the hydrates gives cement its strength.

30. (1) Nalanda Mahavihara was founded by Kumargupta 1 of the Gupta dynasty in 5th century CE. It was patronised by various rulers including King Harshavardhana of Kannauj (7^{th} century CE) and the Pala rulers (8^{th}–12^{th} century CE) as well as various scholars.

31. (1) Khuda Bakhsh Oriental Public Library a unique repository of about 21000 Oriental manuscripts and 2.5 lakh printed books. Though founded earlier, it was opened for public in 29 October, 1891 by the illustrious son of Bihar Khan Bahadur Khuda Bakhsh with 4,000 manuscripts, of which he inherited 1,400 from his father Maulvi Mohammed Bakhsh.

32. (4) Chandelas are well known for their art and architecture, most notably for the temples at their original capital Khajuraho.

33. (4) Gautam Buddha breathe his last sermon and was cremated at Kushinagar.

34. (2) The first Indian cotton cloth mill was established in 1818 at Fort Gloaster near Kolkata, but this mill was a failure. The second mill which was established by KGN Daber in 1854 is called the true foundation of modern cotton industry in India. Its name was Bombay Spinning and Weaving Company, Bombay.

35. (2) Rana Kumbha commissioned the construction of an imposing, 37-meter-high, 9 story Victory Tower at Chittor. The tower called Vijay Stambha (Victory Tower) was completed in 1458.

36. (2) Eugen Steinach (1861–1944) researched sex hormones and their effects on mammals in the late nineteenth and early twentieth centuries in Europe.

37. (4) In 1958, Acharya Vinoba Bhave was the first recipient of the international Ramon Magsaysay Award for Community Leadership. He was also awarded the Bharat Ratna posthumously in 1983.

38. (2) Fermentation is a metabolic process that produces chemical changes in organic substrates through the action of enzymes.

39. (2) Two electrons in the same orbital, they have opposite spin.

40. (1) Galvanization or galvanizing is the process of applying a protective zinc coating to steel or iron, to prevent rusting.

41. (2) A stem cell is a cell with the unique ability to develop into specialised cell types in the body. In the future they may be used to replace cells and tissues that have been damaged or lost due to disease.

42. (3) The Khyber Pass is the main route between Pakistan and Afghanistan. The pass itself is entirely in Pakistan. The nearest major cities on the route that goes over the pass are Jalalabad in Afghanistan and Peshawar in Pakistan.

43. (3) Designed and built by Gian Lorenzo Bernini between 1656 and 1667.

44. (4) The Man Booker Prize for Fiction is a literary prize awarded each year for the best original novel written in the English language and published in the United Kingdom. From its inception, only novels written by Commonwealth, Irish and South African (and later Zimbabwean) citizens were eligible to receive the prize.

45. (4) India Post has provided the savings bank facility to the largest number of account holders in India.

46. (4) Sikandar Lodhi died in 1517 and was succeeded by his son Ibrahim Lodi, who was the last Sultan of the Delhi Sultanate. Babur defeated and killed Ibrahim Lodi in the Battle of Panipat in 1526. The death of Ibrahim Lodi ended the Delhi Sultanate and the Mughal Empire replaced it.

47. (2) India has abundant domestic reserves of coal and most of these are in the states of Jharkhand, Odisha, West Bengal, Bihar, Chhattisgarh, Telangana and Madhya Pradesh. As on 1 April, 2014, the total reserves of coal in Jharkhand is 80,716 million tonnes which is the highest in India.

48. (2) As per the provisions of Article 324 of Constitution, Chief Election Commissioner and Election Commissioners are appointed by the President. They hold office for the term of 6 years or until they attain age of 65 years, whichever is earlier.

49. (3) Under apartheid, nonwhite South Africans (a majority of the population) would be forced to live in separate areas from whites and use separate public facilities and contact between the two groups would be limited. It was existed in South Africa from 1948 until the early 1990s.

50. (2) The Indo-Greeks were the first rulers in India to issue coins. They are the rulers who trace their decedents to Bactria in Central Asia were the first to issue Gold Coins.

PART-III
(QUANTITATIVE APTITUDE)

51. (3) $\tan 2\theta . \tan 3\theta = 1$

$$\Rightarrow \quad \tan 3\theta = \frac{1}{\tan 2\theta} = \cot 2\theta$$
$$\Rightarrow \quad \tan 3\theta = \tan (90° - 2\theta)$$
$$\Rightarrow \quad 3\theta = 90° - 2\theta$$
$$\Rightarrow \quad 5\theta = 90°$$
$$\Rightarrow \quad \theta = 18°$$
$$\therefore \quad 2\cos^2 \frac{5\theta}{2} - 1 = 2\cos^2 45° - 1$$
$$= 2 \times \frac{1}{2} - 1 = 0$$

52. (1) Radius = r_1 and r_2 respectively, then $\pi r_1^2 h_1 = \pi r_2^2 h_2$

where h_1 and h_2 are heights

$\therefore$ According to question,

$$h_1 : h_2 = 1 : 2$$
$$\therefore \quad r_1 : r_2 = \sqrt{h_2 : h_1} = \sqrt{2:1}$$
$$= \sqrt{2} : 1$$

53. (2) Inradius $= \frac{\text{Side}}{2\sqrt{3}}$

$$\Rightarrow 3 = \frac{\text{Side}}{2\sqrt{3}}$$
$$\Rightarrow \text{Side} = 3 \times 2\sqrt{3} = 6\sqrt{3} \text{ cm}$$

54. (2) A can finish the whole work in $= x$ days

According to question,

$$3x - x = 60$$
$$\therefore \quad x = 30 \text{ days}$$

$\therefore$ A can finish the work in 30 days and B can finish the same work in 90 days.

$\therefore$ (A + B)'s one day's work

$$= \frac{1}{30} + \frac{1}{90} = \frac{4}{90}$$

$\therefore$ (A + B)'s can finish the complete work in $= \frac{90}{4} = 22\frac{1}{2}$ days

55. (1) $\left(x+\frac{1}{x}\right)^2 = 3$

$\Rightarrow \quad x+\frac{1}{x} = \sqrt{3}$

On cubing both sides,

$\left(x+\frac{1}{x}\right)^3 = 3\sqrt{3}$

$\Rightarrow x^3 + \frac{1}{x^3} + 3\left(x+\frac{1}{x}\right) = 3\sqrt{3}$

$\Rightarrow x^3 + \frac{1}{x^3} + 3\sqrt{3} = 3\sqrt{3}$

$\Rightarrow \quad x^3 + \frac{1}{x^3} = 0$

$\Rightarrow \quad x^6 + 1 = 0$

$\therefore \; x^{72} + x^{66} + x^{54} + x^{36} + x^{24} + x^6 + 1$

$= (x^6)^{12} + (x^6)^{11} + (x^6)^9 + (x^6)^6 + (x^6)^4 + x^6 + 1$

$= 1 - 1 - 1 + 1 + 1 + 0 = 1$

56. (2) According to question,

$(6M + 8B) \times 10 = (26M + 48B) \times 2$

$\therefore \quad 60M + 80B = 52M + 96B$

or, $\quad 1M = 2B$

$\therefore \quad 15M + 20B = (30 + 20)B$

$= 50$ boys

and $\quad 6M + 8B = (12 + 8)$ boys

$= 20$ boys

20 boys can finish the work in 10 days

$\therefore$ 50 boys can finish the work in

$\frac{20 \times 10}{50}$ days = 4 days

57. (3) Time taken to cover 20 km at the speed of 5 km/hr = 4 hours

$\therefore$ Fixed time

= 4 hours – 40 minutes = 3 hours 20 minutes

Time taken to cover 20 km at the speed of 8 km/hr

$= \frac{20}{8}$ = 2 hours 30 minutes

$\therefore$ Required time = 3 hours 20 minutes – 2 hours 30 minutes = 50 minutes

58. (2) $\sin 17° = \frac{x}{y}$

$\cos 17° = \sqrt{1 - \sin^2 17°}$

$= \sqrt{1 - \frac{x^2}{y^2}} = \sqrt{\frac{y^2 - x^2}{y^2}}$

$= \sqrt{\frac{y^2 - x^2}{y}}$

$\sec 17° = \frac{y}{\sqrt{y^2 - x^2}}$

$\sec 73° = \sin (90° - 17°) = \cos 17°$

$\therefore \; \sec 17° - \sin 73°$

$= \frac{y}{\sqrt{y^2 - x^2}} - \frac{\sqrt{y^2 - x^2}}{y}$

$= \frac{y^2 - y^2 + x^2}{y\sqrt{y^2 - x^2}} = \frac{x^2}{y\sqrt{y^2 - x^2}}$

59. (2) If two medians of a ΔABC are equal then triangle is an isosceles triangle.

60. (2) Required percent increase

$= \frac{7500 - 5300}{5300} \times 100 = 41.5\%$

61. (1) Profit in year 2009–10

= Gross Traffic Receipt – Total expenditure

= 8500 – 8000 = 500

Therefore, profit percent of Gross Traffic Receipt

$= \frac{500}{8500} \times 100 = 5.9\%$

62. (4) Profit percent of Gross Traffic Receipt in year 2010–11

$= \frac{9400 - 8800}{9400} \times 100 = 6.38\%$

63. (3) Profit percent

$= \frac{\text{Gross Traffic profit} - \text{Total Expenditure}}{\text{Gross Traffic profit}} \times 100$

$\therefore$ According to question,

$10 = \left[1 - \frac{\text{Total expenditure}}{\text{Gross Traffic profit}}\right] \times 100$

$\therefore \; \frac{\text{Total Expenditure}}{\text{Gross Traffic profit}} = 1 - \frac{10}{100}$

$= 0.9$

$\therefore$ According to question,

Total expenditure = 5800

$\therefore$ Gross Traffic profit

$= \frac{5800}{0.9}$ = ₹ 6444 crore

64. (4) Required increase

= ₹ (8800 – 5300) crore

= ₹ 3700 crore

65. (1) $? = 1 + \cfrac{1}{1 + \cfrac{2}{2 + \cfrac{3}{1 + \frac{4}{5}}}}$

$= 1 + \cfrac{1}{1 + \cfrac{2}{2 + \cfrac{3 \times 5}{5 + 4}}}$

$= 1 + \cfrac{1}{1 + \cfrac{2}{2 + \frac{15}{9}}}$

$= 1 + \cfrac{1}{1 + \cfrac{2}{2 + \frac{5}{3}}}$

$= 1 + \cfrac{1}{1 + \cfrac{2 \times 3}{6 + 5}} = 1 + \frac{1 \times 11}{11 + 6}$

$= 1 + \frac{11}{17} = 1\frac{11}{17}$

66. (2) $\sqrt{1.3} + \sqrt{1300} + \sqrt{0.013}$

$= \sqrt{\frac{130}{100}} + 10\sqrt{13} + \sqrt{\frac{130}{10000}}$

$= \frac{1}{10}\sqrt{130} + \frac{1}{10}\sqrt{13} + \frac{1}{100}\sqrt{130}$

$= \frac{11.40}{10} + 3.605 \times 10 + \frac{11.40}{100}$

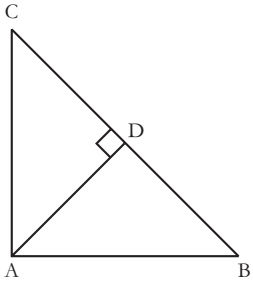
$= 1.140 + 36.05 + 0.1140 = 37.304$

67. (2) In Δs ACD and ABC,

$\angle CDA = \angle CAB = 90°$

$\angle C$ is common,

$\therefore \; \Delta ACD \sim \Delta ABC$



$\therefore \; \frac{\Delta ACD}{\Delta ABC} = \frac{AC^2}{BC^2} \Rightarrow \frac{10}{40} = \frac{9^2}{BC^2}$

$\Rightarrow \quad BC^2 = 4 \times 9^2$

$\therefore \quad BC = 2 \times 9 = 18$ cm

68. (1) $? = \sqrt{5 + 2\sqrt{6}} - \cfrac{1}{\sqrt{5} + 2\sqrt{6}}$

$= \cfrac{\left(\sqrt{5 + 2\sqrt{6}}\right)^2 - 1}{\sqrt{5 + 2\sqrt{6}}}$

$= \cfrac{5 + 2\sqrt{6} - 1}{\sqrt{5 + 2\sqrt{6}}}$

$= \cfrac{4 + 2\sqrt{6}}{\sqrt{5 + 2\sqrt{6}}} = 2\sqrt{2}$

69. (3) $a + b + c = 0$

$\Rightarrow \quad b + c = -a$

On squaring both sides,

$\Rightarrow \quad (b + c)^2 = a^2$

$\Rightarrow \quad b^2 + c^2 + 2bc = a^2$

$\Rightarrow a^2 + b^2 + c^2 + 2bc = 2a^2$

$\Rightarrow \quad a^2 + b^2 + c^2 = 2a^2 - 2bc$

$= 2(a^2 - bc)$

$$\therefore \quad \frac{a^2+b^2+c^2}{a^2-bc} = \frac{2(a^2-bc)}{a^2-bc} = 2$$

70. (4) I. Interior angle of regular pentagon = 180 – exterior angle

$= 180° - 72° = 108°$

and exterior angle of decagon

$$= \frac{360}{10} = 36°$$

II. Sum of all interior angle $(n-2) \times 180° = (6-2) \times 180°$

$= 4 \times 180 = 720°$

Sum of all exterior angles

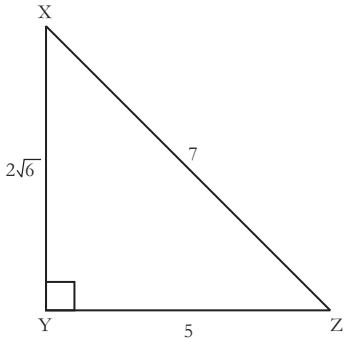
$= 4 \times 90 = 360°$

Clearly sum of interior angle = 2 × sum of all exterior angles

III. Clearly number of diagonal of a polygon of n side

$$= \frac{n(n-1)}{2} - n$$

71. (2)



$XZ - YZ = 2$ .... (i)

$\Rightarrow \quad XY^2 + YZ^2 = XZ^2$

$\Rightarrow \quad (2\sqrt{6})^2 = XZ^2 - YZ^2$

$\Rightarrow 24 = (XZ - YZ)(XZ + YZ)$

$\Rightarrow \quad XZ + YZ = 12$ .... (ii)

Adding both the equations,

$2XZ = 14 \Rightarrow XZ = 7$

$\therefore \quad YZ = 7 - 2 = 5$

$$\therefore \quad \sec X = \frac{7}{2\sqrt{6}}$$

$$\tan X = \frac{5}{2\sqrt{6}}$$

$$\therefore \quad \sec X + \tan X = \frac{7}{2\sqrt{6}} + \frac{5}{2\sqrt{6}}$$

$$= \frac{12}{2\sqrt{6}} = \sqrt{6}$$

72. (1) $a * b = 2a - 3b + ab$

$\Rightarrow 3 * 5 = 2 \times 3 - 3 \times 5 + 3 \times 5 = 6$

$5 * 3 = 2 \times 5 - 3 \times 3 + 3 \times 5 = 10 - 9 + 15 = 16$

Therefore, $3 * 5 + 5 * 3 = 6 + 16 = 22$

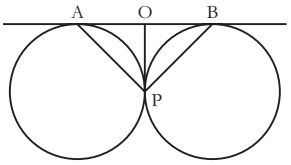
73. (2) $\left[\sqrt[2]{\sqrt[6]{5^9}}\right]^4 \left[\sqrt[6]{\sqrt[3]{5^9}}\right]^4$

$= \left[5^{9\times\frac{1}{6}\times\frac{1}{3}}\right]^4 \left[5^{9\times\frac{1}{6}\times\frac{1}{3}}\right]^4$

$= \left[5^{\frac{1}{2}\times 4}\right]\left[5^{\frac{1}{2}\times 4}\right]$

$= 5^2 \times 5^2 = 5^4$

74. (2)



$OA = OP$

$\therefore \quad \angle PAB = \angle OPA = 35°$

$\therefore \quad \angle AOP = 110°$

$\Rightarrow \quad \angle POB = 70°$

$$\therefore \quad \angle ABP = \frac{180° - 70°}{2}$$

$$= \frac{110}{2} = 55°$$

75. (2) $(a+b+c)^2$

$= a^2 + b^2 + c^2 + 2(ab + bc + ca)$

$\Rightarrow 36 = 14 + 2(ab + bc + ca)$

$\Rightarrow \quad ab + bc + ca = (36 - 14) \div 2$

$\Rightarrow \quad ab + bc + ca = 11$ ... (i)

$\therefore \quad a^3 + b^3 + c^3 - 3abc$

$= (a + b + c)$

$(a^2 + b^2 + c^2 - ab - bc - ca)$

$\Rightarrow \quad 36 - 3abc = 6(14 - 11)$

$\Rightarrow \quad 36 - 3abc = 84 - 66 = 18$

$\Rightarrow \quad 3abc = 36 - 18 = 18$

$\Rightarrow \quad abc = 6$

PART-IV (ENGLISH LANGUAGE)

76. (2) The subject of the sentence 'Hostility' is singular.

Hence, Hostility between the two groups has ... will be a correct sentence.

77. (2) Replace group of words 'with many different' by 'with different/of different'.

78. (1) The word 'people' is a Plural Noun. Hence, 'Many people were' will be a correct usage.

79. (3) The subject of the clause 'the physically challenged people' is plural. Hence, 'encounter in their daily life' should be used because plural subject agrees with plural verb.

80. (3) The structure of Past Perfect Tense is: Subject + had + V_3 (Past Participle)

Hence, 'I had not locked the door' should be used.

81. (3) Once upon a time, there was a huge tree on the **bank** of a river.

82. (1) The birds were living there happily as the tree with its widespread branches provided **shelter** to them from scorching sun and heavy rains.

83. (4) All of them were **shivering** with cold.

84. (3) On hearing this, the monkeys got **annoyed** and swore to teach the birds a lesson.

85. (1) They were full of **regret** for their words and realized that they should not have given advice that was not asked for.

86. (3) 'Kindest' in place of 'Kinder'.

87. (1) 'Middle' in place of 'Centre'.

88. (4) No improvement required.

89. (2) 'Willing' in place of 'Wilful'.

90. (2) 'Passed away' in place of 'died'.

91. (3) The correct spelling is '**manageable**'.

92. (3) The correct spelling is '**libellous**'.

93. (2) The correct spelling is '**homicide**'.

94. (4) The correct spelling is '**gallant**'.

95. (2) The correct spelling is '**privilege**'.

96. (1) **Linguist** – is someone who studies language.

97. (1) **Bohemian** – a socially unconventional person, especially one who is involved in the arts.

98. (1) **Impose** – to force or inflict something on someone else.

99. (4) **Jettison** – throw or drop something from an aircraft or ship.

100. (3) **Pandemonium** – wild and noisy disorder or confusion.

❑❑❑

22

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 04 September, 2016

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–9): In each of the following questions, select the related word/letters/ number from the given alternatives.

1. Life : Death : : Beginning : ?
(1) Era (2) End
(3) Time (4) Commence

2. Leg : Knee : : Arm : ?
(1) Hand (2) Wrist
(3) Elbow (4) Sleeve

3. Interrupt : Speak : : ?
(1) Shout : Yell
(2) Intrude : Enter
(3) Interfere : Clash
(4) Telephone : Telegraph

4. BD : Cl : : DP : ?
(1) EZ (2) EY
(3) DF (4) EX

5. ACE : GIK : : MOQ : ?
(1) SUW (2) STU
(3) STW (4) SVW

6. EGIK : LJHF : : SUWY : ?
(1) ZXVT (2) LNPR
(3) MOQS (4) TVXZ

7. 3 : 27 : : 4 : ?
(1) 16 (2) 64
(3) 28 (4) 32

8. 18 : 52 : : 12 : ?
(1) 34 (2) 48
(3) 60 (4) 72

9. 8 : 9 : : 64 : ?
(1) 16 (2) 20
(3) 25 (4) 36

Directions (10–18): In each of the following questions, select the one which is different from the other three responses.

10. (1) Iron (2) Steel
(3) Gold (4) Tin

11. (1) Book (2) Journal
(3) Article (4) Newspaper

12. (1) Araldite (2) Gel
(3) Plaster (4) Wax

13. (1) D (2) E
(3) F (4) G

14. (1) DGLS (2) MPSV
(3) HKPW (4) KNSZ

15. (1) ROPE (2) WED
(3) DON (4) POT

16. (1) 204 (2) 220
(3) 228 (4) 252

17. (1) 5 – 58 (2) 6 – 69
(3) 7 – 80 (4) 8 – 90

18. (1) 49 – 100 (2) 81 – 144
(3) 24 – 64 (4) 9 – 36

19. Arrange the following words according to English Dictionary:
A. Advertise B. Admit
C. Addition D. Adhesive
(1) A, B, C, D (2) C, D, B, A
(3) C, B, D, A (4) D, A, B, C

Directions (20–21): In each of the following questions, which one of the given responses would be a meaningful order of the following words in ascending order?

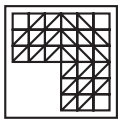
20. A. Seed B. Fruit
C. Plant D. Food
(1) BADC (2) ADBC
(3) ACBD (4) CABD

21. A. Yearly B. Fortnightly
C. Monthly D. Daily
E. Weekly
(1) E, B, C, D, A (2) D, E, B, C, A
(3) B, E, D, C, A (4) A, D, E, C, B

22. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
KLM_, KL_N, K_MN,_LMN
(1) NMLK (2) KLMN
(3) LKNM (4) KLNM

23. Which answer figure will complete the pattern in the question figure?

Question Figure



Answer Figures

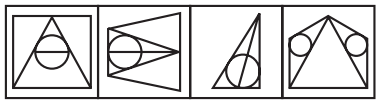
(1)  (2) 

(3)  (4) 

24. Select the answer figure in which the question figure is hidden/ embedded.

Question Figure

Answer Figures

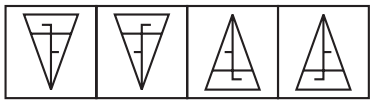


(1) (2) (3) (4)

25. Which of the answer figure is exactly the mirror image of the given figure, when the mirror is held on the line AB?

Question Figure

Answer Figures



(1) (2) (3) (4)

PART-II (GENERAL AWARENESS)

26. Bacteria was first discovered by
(1) A.V. Leeuwenhoek
(2) Robert Hooke
(3) Robert Koch
(4) Louis Pasteur

27. The author of the book titled 'The Future of India' is
(1) Bimal Jalan
(2) Deepak Chopra
(3) Anurag Mathur
(4) Amitav Ghosh

28. The disease that is caused by virus is
(1) Typhoid
(2) Cholera
(3) Common Cold
(4) Tetanus

29. The name of the Indian 'National River' is
(1) Brahmaputra (2) Mahanandi
(3) Ganga (4) Kosi

30. The centre of gravity of a sprinter during the race lies
(1) ahead of his feet
(2) behind his feet
(3) at the centre of the body
(4) to the left side of the body

31. Galena is a mineral of
(1) iron (2) gold
(3) lead (4) calcium

32. Magnalium is an alloy of
(1) Aluminium and Magnesium
(2) Magnesium and Tin
(3) Aluminium and Zinc
(4) Manganese and Magnesium

33. Galvanization of iron is carried out using
(1) Zinc (2) Tin
(3) Copper (4) Chromium

34. The locomotory organ of 'Amoeba' is
(1) Pseudopodia (2) Parapodia
(3) Flagella (4) Cilia

35. An instrument for measuring blood pressure is called
(1) Barometer
(2) Spirometer
(3) Sphygmomanometer
(4) Haemocytometer

36. The term 'Rh factor' refers to
(1) Rhesus factor
(2) Rheumatoid factor
(3) Renal factor
(4) Rhombic factor

37. The discoverer of penicillin was
(1) Lord Lister
(2) Alexander Fleming
(3) Karl Landsteiner
(4) Walter Reed

38. The Reserve Bank of India was nationalised in the year
(1) 1935 (2) 1969
(3) 1949 (4) 1980

39. The abbreviation 'SEBI' stands for
(1) Savings and Exchange Bank of India
(2) Securities and Exchange Bank of India
(3) Survey of essential business in India
(4) Securities and Exchange Board of India

40. Blood groups were discovered by
(1) Altmann (2) Landsteiner
(3) Losch (4) Ronald Ross

41. Which of the following is **not** one of the animals carved on the Sarnath Pillar?
(1) Humped Bull (2) Deer
(3) Elephant (4) Horse

42. The 'Kannauj assembly' organised by Harsha was held in honour of
(1) Fa-Hien (2) Itsing
(3) Hieun-Tsang (4) Megasthenes

43. The first metal used by man was
(1) Aluminium (2) Copper
(3) Iron (4) Silver

44. Satvahanas minted their coins predominantly in
(1) Lead (2) Silver
(3) Gold (4) Copper

45. Which one of the following is the highest cloud?
(1) Cirrus
(2) Stratocumulus
(3) Nimbostratus
(4) Cumulus

46. Cloudy nights are warmer compared to clear cloudless nights, because clouds mainly
(1) Absorb heat from the atmosphere send it towards earth
(2) Prevent cold waves from the sky descending on earth
(3) Reflect back the heat given by earth
(4) Produce heat and radiate it toward earth

47. Where in India an 'Mushroom' rock found?
(1) Eastern Ghats
(2) Western Ghats
(3) Thar Desert
(4) Satpura Range

48. Badland topography is characteristic
(1) Chambal valley
(2) Coastal area
(3) Sundarban delta
(4) Gulf of Kachchh

49. The most distinguishing feature of oligopoly is
(1) Number of firms
(2) Interdependence
(3) Negligible influence on price
(4) Price leadership

50. Who defined investment as "the construction of a new capital asset like machinery or factory building"?
(1) Hansen (2) J.M. Keynes
(3) Harrod (4) J.R. Hicks

PART-III (QUANTITATIVE APTITUDE)

51. If $a : b : c = (y - z) : (z - x) : (x - y)$ then the value of $ax + by + cz$ is
(1) 1 (2) 3
(3) 0 (4) –1

52. Two numbers are in the ratio 3 : 5. If each number is increased by 10, the ratio becomes 5 : 7. The smaller number is
(1) 9 (2) 12
(3) 15 (4) 25

53. If $\frac{\sqrt{x+4}+\sqrt{x-4}}{\sqrt{x+4}-\sqrt{x-4}} = 2$, then x is equal to
(1) 2.4 (2) 3.2
(3) 4 (4) 5

54. A shopkeeper marks the price of an item keeping 20% profit. If he offers a discount of $12\frac{1}{2}\%$ on the marked price, his gain percent will be
(1) 4.5 (2) 5
(3) 7.5 (4) 8

55. A seller marks his goods 30% above their cost price but allows 15% discount for cash payment. His percentage of profit when sold in cash is
(1) 10.5 (2) 15
(3) 9 (4) 8.5

56. If $14 - x^2 = x^{-2}$, then $x^5 + x^{-5}$ will be equal to
(1) 648 (2) 728
(3) 732 (4) 724

57. If $A + B = \frac{\pi}{4}$, then $(1 + \tan A)(1 + \tan B)$ will be equal to
(1) 0 (2) 1
(3) 2 (4) 3

58. If 50% of $(p - q) = 30\%$ of $(p + q)$, then $p : q$ is equal to
(1) 5 : 3 (2) 4 : 1
(3) 3 : 5 (4) 1 : 4

59. What will be the ratio between the side of a triangle made between x-axis, y-axis and $3x - 2y = 5$?
(1) $5 : 3 : \sqrt{15}$ (2) $2 : 3 : \sqrt{13}$
(3) $3 : 5 : \sqrt{34}$ (4) $2 : 5 : \sqrt{29}$

60. A man travelled a distance of 61 km in 9 hours partly on foot at the rate of 4 km/hr and partly on bicycle at the rate of 9 km/hr. The distance travelled on foot was
(1) 12 km (2) 16 km
(3) 20 km (4) 24 km

61. A train crosses a pole in 15 seconds and a platform 100 metres long in 25 seconds. Its length (in metres) is
(1) 50 (2) 100
(3) 150 (4) 200

62. 20 men or 24 women can complete a piece of work in 20 days. If 30 men and 12 women undertake to complete the work, the work will be completed in
(1) 10 days (2) 12 days
(3) 15 days (4) 16 days

63. The area of a right-angled isosceles triangle having hyypotenuse $16\sqrt{2}$ cm is
(1) 144 cm^2 (2) 128 cm^2
(3) 112 cm^2 (4) 110 cm^2

64. The radius of base and slant height of a cone are in the ratio 4 : 7. If its curved surface area is 792 cm^2, then the radius (in cm) of its base is [Use $\pi = \frac{22}{7}$]
(1) 8 (2) 12
(3) 14 (4) 16

65. The length (in cm) of a chord of a circle of radius 13 cm at a distance of 12 cm from its centre is
(1) 5 (2) 8
(3) 10 (4) 12

66. If $12x^4 - 56x^3 + 89x^2 - 56x + 12 = 0$, then from the following which value of $\left(\frac{x^2+1}{x}\right)$ is not possible?
(1) $\frac{13}{6}$
(2) $\frac{5}{2}$
(3) $\frac{7}{8}$
(4) None of these

67. An amount of ₹ 6,000 lent at 5% per annum compound interest for 2 years will become
(1) ₹ 600 (2) ₹ 6,600
(3) ₹ 6,610 (4) ₹ 6,615

68. At what rate percent per annum of compound interest, will a sum of money become four times of itself in two years?
(1) 100 (2) 75
(3) 50 (4) 20

69. If A and B together can complete a work in 12 days, B and C together in 15 days and C and A together in 20 days, then B alone can complete the work in
(1) 30 days (2) 25 days
(3) 24 days (4) 20 days

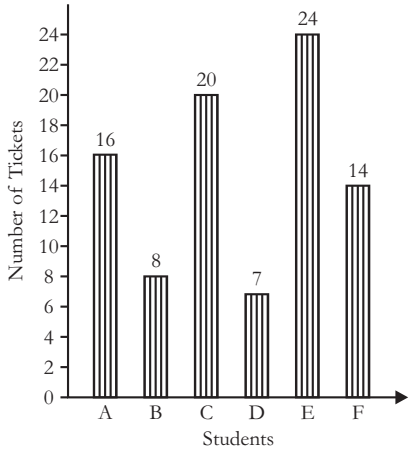
70. A man on the top of a tower observes a car moving at a uniform speed coming directly towards it. If it takes 12 minutes for the angle of depression to change from 30° to 45°, how soon after this, will be car reach the tower?
(1) $6(\sqrt{3} - 1)$ min.
(2) $6(\sqrt{3} + 1)$ min.
(3) $3(\sqrt{6} + 1)$ min.
(4) $3(\sqrt{6} - 1)$ min.

71. A man goes from a place A to B at a speed of 12 km/hr and returns from B to A at a speed of 18 km/hr. The average speed for the whole journey is
(1) $14\frac{2}{5}$ km/hr (2) 15km/hr
(3) $15\frac{1}{2}$ km/hr (4) 16 km/hr

72. A tap can fill an empty tank in 12 hours and another tap can empty half the tank in 10 hours. It both the taps are opened simultaneously, how long would it take for the empty tank to be filled to half its capacity?
(1) 30 hours (2) 20 hours
(3) 15 hours (4) 12 hours

Directions (73–75): The bar graph, given here, shows the number of tickets sold by 6 students A, B, C, D, E and F during a fair.

Observe the graph and answer questions number 73-75 based on it



73. Total number of tickets sold by A, B and C is
(1) 45 (2) 44
(3) 42 (4) 40

74. The least number of tickets were sold by
(1) B (2) F
(3) A (4) D

75. Total number of tickets sold by D, E and F is
(1) 47 (2) 46
(3) 45 (4) 44

PART-IV (ENGLISH LANGUAGE)

Directions (76–80): In the following questions, some of the sentences have errors and some have none. Find out which part of a sentence has and blacken the rectangle corresponding to the appropriate letter (1, 2, 3). If there is no error, blacken the rectangle corresponding to (4) in the Answer sheet.

76. He walks (1)/ as if the earth (2)/ belongs to him (3)/ No error (4)

77. The clerk was (1)/ not intimidated by (2)/ his boss's bullying (3)/ No error (4)

78. This misogynist hates (1)/ all mother in laws, (2)/ lady-doctors and house maids (3)/ No error (4)

79. How to solve the problems (1)/ is the main concern of organizers (2)/ at the moment (3)/ No error (4)

80. We requested the watchman (1)/ to clean up the basement (2)/ so that the children had enough space to play (3)/ No error (4)

Directions (81–85): In the following questions, sentences are given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four and indicate it by blackening the appropriate rectangle in the Answer Sheet.

81. The chairperson brushed ..... my suggestion.
(1) Out (2) Over
(3) Aside (4) About

82. She politely asked him ..... .
(1) To leave her hand
(2) To give up her hand
(3) To release her hand
(4) To let her hand go

83. Unhygienic surroundings ..... health problems.
(1) Give rise to
(2) Bring into being
(3) Call for
(4) Set in

84. The engineers ..... this bridge since last year.
(1) Have repaired
(2) Had repaired
(3) Have been repairing
(4) Are repairing

85. There are some people who doubt the ..... of anything they see in a newspaper.
(1) Credulity (2) Possibility
(3) Veracity (4) Existence

Directions (86–90): In the following questions, a part of the sentence is underlined. Below are given alternatives to the **Bold** part at (1), (2) and (3) which may improve the sentence. Choose the correct alternative. In case no improvement is needed your answer is (4).

86. Several disciples **follow** the footsteps of their guru.
(1) Follow in
(2) Follow on
(3) Are following
(4) No improvement

87. **I did not see him** since he wrote last.
(1) I could not see him
(2) I shall not see him
(3) I have not seen him
(4) No improvement

88. Who will provide **relief** to the poor in this country?
(1) Money
(2) Succour
(3) Shelter
(4) No improvement

89. Most of the non-Western countries **have been subject either to** total colonial rule or varying degrees of economic control and their native population has either been destroyed or Westernised.
(1) Has been subject to either
(2) Either have been subject to
(3) Have been either subjected to
(4) No improvement

90. Strenuous **as it was,** they went on with their task.
(1) Since it was
(2) Because it was
(3) Although it was
(4) No improvement

Directions (91–95): In the following questions, groups of four words are given. In each group, one word is correctly spelt. Find the correctly spelt word and mark your answer in the Answer Sheet.

91. (1) Volumenous (2) Voluptous
(3) Voceferous (4) Virtuous

92. (1) Lision (2) Benine
(3) Aqueous (4) Bavine

93. (1) Prolifirate (2) Propitiate
(3) Apropriate (4) Apreciate

94. (1) Fragrent (2) Fragmant
(3) Flurocent (4) Flamboyant

95. (1) Mammal (2) Mamman
(3) Mammath (4) Mambrane

Directions (96–100): Read the following passage carefully and choose the best answer to each question out of the four alternatives.

PASSAGE

The achievement of science in the twentieth century has been very great. Its influence can be felt in every sphere of life. From the small pins and needles

to the huge iron sheets and joints, most of the things we require for our everyday use, come out of factories where scientific principles are utilized for practical ends. Science has enabled man to bring forces of nature under control and to use them for his own advantage. It has brought the distant parts of the world close together. Our knowledge of the universe has been much widened on account of the untiring efforts of the astronomers like Jeans and Eddington. Remarkable cures of human diseases have been possible owing to the discovery of some wonderful medicines.

96. The main idea of the passage is—
(1) The impact of science can be felt in every sphere of life
(2) Science is an anathema
(3) Nothing is beyond the purview of science
(4) Science can work miracles

97. The mode of approach is—
(1) Logical (2) Anatomical
(3) Descriptive (4) Expository

98. What has enabled man to harness the forces of nature to the advantage of mankind?
(1) Arts (2) Oratory
(3) Bravery (4) Science

99. Science has proved a great boon for—
(1) Scientists
(2) Artists
(3) Explorers
(4) Mankind

100. The most appropriate title for the passage will be
(1) Science is a curse
(2) Science a great boon
(3) Achievements of science
(4) None of these

Short Answers

1. (2)	**2.** (3)	**3.** (2)	**4.** (2)	**5.** (1)	**6.** (1)	**7.** (2)	**8.** (1)	**9.** (3)	**10.** (2)
11. (3)	**12.** (4)	**13.** (2)	**14.** (2)	**15.** (1)	**16.** (2)	**17.** (4)	**18.** (3)	**19.** (2)	**20.** (3)
21. (2)	**22.** (1)	**23.** (2)	**24.** (2)	**25.** (1)	**26.** (1)	**27.** (1)	**28.** (3)	**29.** (3)	**30.** (1)
31. (3)	**32.** (1)	**33.** (1)	**34.** (1)	**35.** (3)	**36.** (1)	**37.** (2)	**38.** (3)	**39.** (4)	**40.** (2)
41. (2)	**42.** (3)	**43.** (2)	**44.** (1)	**45.** (1)	**46.** (3)	**47.** (3)	**48.** (1)	**49.** (1)	**50.** (2)
51. (3)	**52.** (3)	**53.** (4)	**54.** (2)	**55.** (1)	**56.** (4)	**57.** (3)	**58.** (2)	**59.** (2)	**60.** (2)
61. (3)	**62.** (1)	**63.** (2)	**64.** (2)	**65.** (3)	**66.** (3)	**67.** (4)	**68.** (1)	**69.** (4)	**70.** (2)
71. (1)	**72.** (1)	**73.** (2)	**74.** (4)	**75.** (3)	**76.** (3)	**77.** (4)	**78.** (2)	**79.** (1)	**80.** (1)
81. (3)	**82.** (3)	**83.** (1)	**84.** (3)	**85.** (3)	**86.** (1)	**87.** (3)	**88.** (2)	**89.** (4)	**90.** (3)
91. (4)	**92.** (3)	**93.** (2)	**94.** (4)	**95.** (1)	**96.** (1)	**97.** (4)	**98.** (4)	**99.** (4)	**100.** (2)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (2) 'Life' is opposite in meaning to 'Death'. Similarly, 'Beginning' is opposite in meaning to 'End'.

2. (3) 'Leg' is analogus to 'Arm' and 'Knee' is analogus to 'Elbow'.

3. (2) **Interrupt (Verb)** means 'to stop the continuous progress of something temporarily', 'to stop somebody speaking or doing something by speaking oneself or by causing some other sort of disturbance'.

Intrude (Verb) means 'to put oneself into a place or situation where one is not welcome', 'to disturb'.

4. (2) B ⇒ 2 : Position Number
$2 \times 2 = 4 \Rightarrow D$
C ⇒ 3; $3 \times 3 = 9 \Rightarrow 1$
D ⇒ 4; $4 \times 4 = 16 \Rightarrow P$
E ⇒ 5; $5 \times 5 = 25 \Rightarrow Y$

5. (1) A C E → G I K
+6, +6, +6

Similarly,
M O Q → S U W
+6, +6, +6

6. (1) E G I K → L J H F
+1, +1, +1, +1

Similarly,
S U W Y → Z X V T
+1, +1, +1, +1

7. (2) $3 \times 3 \times 3 = 27$
$4 \times 4 \times 4 = 64$

8. (1) $18 \times 3 - 2 = 54 - 2 = 52$
$12 \times 3 - 2 = 36 - 2 = 34$

9. (3) $(b)^3 = 8$
$2 + 1 = 3$ and $(c)^2 = 9$
Similarly,
$(d)^3 = 64$
$4 + 1 = 5$ and $(5)^2 = 25$

10. (2) Steel is a strong hard metal made of a mixture of iron and carbon. Except steel, all others are elements (metals).

11. (3) Except 'Article' all others are printed reading material. Article is a write up.

12. (4) Except wax, all others are used to join or bring together.

13. (2) Except letter 'E', all others are consonants.

14. (2) $D \xrightarrow{+3} G \xrightarrow{+5} L \xrightarrow{+7} S$

$\boxed{M \xrightarrow{+3} P \xrightarrow{+5} S \xrightarrow{+3} V}$

$H \xrightarrow{+3} K \xrightarrow{+5} P \xrightarrow{+7} W$

$K \xrightarrow{+3} N \xrightarrow{+5} S \xrightarrow{+7} S$

15. (1) There are two Vowels in the word ROPE.

16. (2) Except the number 220, all other numbers are completely divisible by 3.

$\frac{204}{3} = 68$; $\frac{228}{3} = 76$

$\frac{252}{3} = 84$

But, $\frac{220}{3} = 73.33$

17. (4) In the number pair 8 – 90, both the numbers are even numbers.

18. (3) Except in the number pair 24 – 64, in all other number pairs both the numbers are perfect squares.

$49 - 100 \Rightarrow (7)^2 - (10)^2$
$81 - 144 \Rightarrow (9)^2 - (12)^2$
$9 - 36 \Rightarrow (c)^2 - (6)^2$

19. (2) Arrangement of words according to the English Dictionary:

C. Addition
↓
D. Adhesive
↓
B. Admit
↓
A. Advertise

20. (3) Meaningful order of the words in ascending order:

A. Seed
↓
C. Plant
↓
B. Fruit
↓
D. Food

21. (2) Meaningful order of the words in ascending order:

D. Daily
↓
E. Weekly
↓
B. Fortnighty
↓
C. Monthly
↓
A. Yearly

22. (1) KLM $\boxed{N}$ /KL $\boxed{M}$ N/K $\boxed{L}$
MN/ $\boxed{K}$ LMN

23. (2) Answer figure (2) complete the pattern given in the question figure.

24. (2) Answer figure is hidden in the answer figure (2).

25. (1) Answer figure (1) is exactly the mirror image of the given question figure.

Part-II
(General Awareness)

26. (1) On 26 May, 1676 the first bacteria and first single-celled organisms were described by Antonie van Leeuwenhoek.

27. (1) The book titled "The Future of India" authored by Bimal Jalan, the former Governor of Reserve Bank of India (RBI). Through book, author argues that it is the interface between politics, economics and governance, and their combined effect on the functioning of Indian democracy, which will largely determine India's future.

28. (3) Viruses cause familiar infectious diseases such as the common cold, flu and warts. They also cause severe illnesses such as HIV/AIDS, smallpox, and Ebola.

29. (3) The Ganga is India's longest river (2,525 km) and is considered the holiest of rivers by Hindus. It was declared a national river by Prime Minister Manmohan Singh on 4 November, 2008.

30. (1) The centre of gravity of a sprinter during the race lies ahead of his feet.

31. (3) Galena is the primary ore mineral of lead. Worked for its lead content as early as 3000 BC, it is found in ore veins with sphalerite, pyrite, chalcopyrite, tennantite-tetrahedrite, etc. and in skarns, as well as in sedimentary rocks where it may replace carbonate beds or be deposited in pore spaces. The crystals are bright when fresh but often tarnish after exposure to air.

32. (1) Magnalium is an aluminium alloy with 5% magnesium and 95% aluminum. Generally, more expensive than aluminium, the high strength, low density, and greater workability of alloys with low amounts of magnesium leads to their use in aircraft and automobile parts.

33. (1) Galvanization or galvanizing is the process of applying a protective zinc coating to steel or iron, to prevent rusting. The most common method is hot-dip galvanizing, in which the parts are submerged in a bath of molten zinc.

34. (1) The locomotory organ of amoeba is PSEUDOPODIUM (False feet). This pseudopodium is an elongation of the cytoplasm.

35. (3) Sphygmomanometer - An instrument for measuring blood pressure, particularly in arteries.

36. (1) Rhesus (Rh) factor is an inherited protein found on the surface of red blood cells.

37. (2) Sir Alexander Fleming (6 August, 1881-11 March, 1955), Scottish bacteriologist best known for his discovery of penicillin.

38. (3) The Reserve Bank of India (RBI) is India's Central banking institution, which controls the monetary policy of the Indian rupee. The Reserve Bank of India was established on 1 April, 1935, in accordance with the provisions of the Reserve Bank of India Act, 1934. The Reserve Bank of India was nationalised with effect from 1st January, 1949 on

the basis of the Reserve Bank of India (Transfer to Public Ownership) Act, 1948.

39. (4) Securities and Exchange Board of India (SEBI) is the regulator for the securities market in India. It was established in 1988 and given statutory powers on 30 January 1992 through the SEBI Act, 1992.

40. (2) The blood groups were discovered by Karl Landsteiner in 1901, for which he received the Nobel Prize in Physiology or Medicine in 1930. Blood groups are also present in some other animals such as rodents and apes, including chimpanzees, bonobos and gorillas.

41. (2) The Lion Capital discovered more than a hundred years ago at Sarnath, near Varanasi, is generally referred as Sarnath Lion Capital. Abacus (drum on the bell base) has the depiction of a chakra (wheel) in all four directions and a bull, a horse, an elephant and a lion between every chakra.

42. (3) The Kannauj assembly (643 AD) was held in the honour of Hieun Tsang (Chinese pilgrim) and to popularise Mahayana sect of Buddhism.

43. (2) Copper (Cu) was the first metal used by early humans. Its deposits in the stones that they used were in large amounts and soon they learnt to extract it through melting it.

44. (1) Satavahanas mainly minted their coins in Lead.

45. (1) The highest clouds in the atmosphere are cirrocumulus, cirrus and cirrostratus. Cumulonimbus clouds can also grow to be very high.

46. (3) In clear nights there is no cloud cover to reflect heat back to the surface. Heat escapes into space but when clouds are there, the clouds help keep the heat from leaving our atmosphere therefore keeping the night warm whereas on a clear night there is nothing there to stop heat from escaping. When it is cloudy the heat in the atmosphere is held in. The cloudy nights have a greenhouse effect and trap heat. Clouds trap heat being reflected from the earth. The heat radiation lost from the clear night it just escapes into space.

47. (3) A mushroom rock, also called rock pedestal, or a pedestal rock, is a naturally occurring rock whose shape, as its name implies, resembles a mushroom. The rocks are deformed in a number of different ways: by erosion and weathering, glacial action, or from a sudden disturbance. Mushroom rocks foud in Thar Desert in India.

48. (1) Chambal Valley.

49. (1) An oligopoly is a market structure in which a few firms dominate. When a market is shared between a few firms, it is said to be highly concentrated. Although only a few firms dominate, it is possible that many small firms may also operate in the market.

50. (2) J. M. Keynes defined investment as "the construction of a new capital asset like machinery or factory building".

PART-III (QUANTITATIVE APTITUDE)

51. (3) $\frac{a}{y-z} = \frac{b}{z-x} = \frac{c}{x-y} = k$

$\Rightarrow a = k(y-z);\ b = k(z-x);$
$c = k(x-y)$

$\therefore\ ax + by + cz$
$= k(xy - xz + yz - xy + xz - yz)$
$= 0$

52. (3) Numbers = $3x$ and $5x$

$\therefore\ \frac{3x+10}{5x+10} = \frac{5}{7}$

$\Rightarrow 25x + 50 = 21x + 70$
$\Rightarrow 4x = 20$
$\Rightarrow x = 5$
$\therefore$ Smaller number = $3x = 3 \times 5 = 15$

53. (4) $\frac{\sqrt{x+4} + \sqrt{x-4}}{\sqrt{x+4} - \sqrt{x-4}} = \frac{2}{1}$

By componendo and dividendo,

$\frac{2\sqrt{x+4}}{2\sqrt{x-4}} = \frac{3}{1}$

On squaring,

$\frac{x+4}{x-4} = \frac{9}{1}$

$\Rightarrow 9x - 36 = x + 4$
$\Rightarrow 9x - x = 36 + 4$
$\Rightarrow 8x = 40$
$\therefore x = 5$

54. (2) Cost price = ₹ 100
$\therefore$ Marked price = ₹ 120

SP = $87\frac{1}{2}\%$ of ₹

$120 = \frac{175}{200} \times 120 =$ ₹ 105

$\therefore$ Gain per cent = 5%

55. (1) C.P. = ₹ 100
$\therefore$ Marked price = ₹ 130
S.P. = 8.5% of ₹ 130

₹ $\left(\frac{85 \times 130}{100}\right)$ = ₹ 110.5

$\therefore$ Gain per cent = 10.5

56. (4) $14 - x^2 = x^{-2}$

$\Rightarrow x^2 + x^{-2} = 14$

$\Rightarrow x^2 + \frac{1}{x^2} = 14$ ... (i)

$\Rightarrow x^2 + \frac{1}{x^2} + 2 = 14 + 2 = 16$

$\Rightarrow \left(x + \frac{1}{x}\right)^2 = 4^2$

$\Rightarrow x + \frac{1}{x} = 4$ ... (ii)

Now, $\left(x + \frac{1}{x}\right)^3 = 4^3$

$\Rightarrow x^3 + \frac{1}{x^3} + 3 \times x + \frac{1}{x}\left(x + \frac{1}{x}\right) = 64$

$\Rightarrow x^3 + \frac{1}{x^3} + 3\left(x + \frac{1}{x}\right) = 64$

$\Rightarrow x^3 + \frac{1}{x^3} + 3 \times 4 = 64$

[putting value from equation (ii)]

$\Rightarrow x^3 + \frac{1}{x^3} = 64 - 12$
$= 52$ ... (iii)

Again multiplying equation (i) and (iii),

$\left(x^2 + \frac{1}{x^2}\right)\left(x^3 + \frac{1}{x^3}\right) = 14 \times 52$

$x^5 + \frac{1}{x^2} \times x^3 + x^2 \times \frac{1}{x^3} \times \frac{1}{x^5}$
$= 728$

$\Rightarrow x^5 + \frac{1}{x^5} + \left(x + \frac{1}{x}\right) = 728$

$\Rightarrow \quad x^5 + \frac{1}{x^5} + 4 = 728$

[putting value from equation (i)]

$\Rightarrow \quad x^5 + x^{-5} = 728 - 4 = 724$

57. (3) Given that, $A + B = \frac{\pi}{4}$

$\Rightarrow \quad \tan(A + B) = \tan\frac{\pi}{4} = 1$

$\Rightarrow \frac{\tan A + \tan B}{1 - \tan A \tan B} = 1$

$\Rightarrow \tan A + \tan B = 1 - \tan A \tan B$

$\Rightarrow \tan A + \tan B + \tan A \tan B = 1$

$\Rightarrow 1 + \tan A + \tan B + \tan A \tan B = 1 + 1$ (Note)

$\Rightarrow (1 + \tan A) + \tan B (1 + \tan A) = 2$

$\Rightarrow (1 + \tan A)(1 + \tan B) = 2$

58. (2) $\frac{50}{100}(p - q) = \frac{30}{100}(p + q)$

$\Rightarrow 5(p - q) = 3(p + q)$

$\Rightarrow 5p = 5q = 3p + 3q$

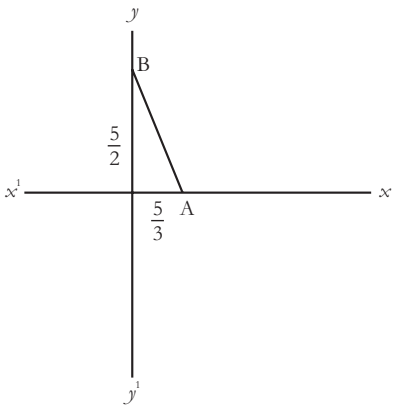
$\Rightarrow 2p = 8q \Rightarrow p = 4q$

$\therefore \; p : q = 4 : 1$

59. (2) If the intersection point of $3x - 2y = 5$ with x-axis ($y = 0$) is A $(x_1, 0)$ then

$3x_1 - 2 \times 0 = 5 \Rightarrow x_1 = \frac{5}{3}$

So, point $A = \left(\frac{5}{3}, 0\right)$



Again, if the intersection point of $3x - 2y = 5$ with y–axis ($x = 0$) is B $(0, y_2)$ then,

$3 \times 0 - 2y_2 = 5$

$\Rightarrow \quad y_2 = \frac{5}{2}$

Now, point $B = \left(0, \frac{5}{2}\right)$

The third point will be origin intersection.

In ΔOAB,

$OA = \frac{5}{3}$ Units; $\quad OB = \frac{5}{2}$ Units

$AB = \sqrt{\left(\frac{5}{3}\right)^3 + \left(\frac{5}{2}\right)^2} = 5\sqrt{\frac{1}{9} + \frac{1}{4}}$

$= \frac{5}{6}\sqrt{13}$ Units

Hence, the required ratio

$= \frac{5}{3} : \frac{5}{2} : \frac{5}{6}\sqrt{13} = 2 : 3 : \sqrt{13}$

60. (2) Man walked for = t hours

$\therefore \; t \times 4 + (9 - t) \times 9 = 61$

$\Rightarrow \quad 4t + 81 - 9t = 61$

$\Rightarrow \quad 81 - 5t = 61$

$\Rightarrow \quad 5t = 20$

$\Rightarrow \quad t = 4$

$\therefore$ Distance travelled on foot

$= 4 \times 4 = 16$ km.

61. (3) Length of train = x metre.

$\therefore \quad \frac{x}{15} = \frac{x + 100}{25}$

$\Rightarrow \quad \frac{x}{3} = \frac{x + 100}{5}$

$\Rightarrow \quad 5x = 3x + 300$

$\Rightarrow \quad 2x = 300$

$\therefore \quad x = \frac{300}{2} = 150$ metre

62. (1) 20 men ≡ 24 women

$\Rightarrow$ 5 men ≡ 6 women

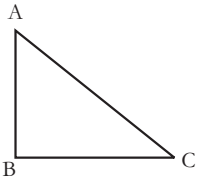
$\therefore$ 30 men + 12 women = 40 men

$\therefore \quad M_1D_1 = M_2D_2$

$\Rightarrow \quad 20 \times 20 = 40 \times D_2$

$\therefore \quad D_2 = \frac{20 \times 20}{40} = 10$ days

63. (2)



$AB = BC = x$;

$AC = 16\sqrt{2}$

$\therefore \quad x^2 + x^2 = (16\sqrt{2})^2$

$\Rightarrow \quad 2x^2 = 16 \times 16 \times 2$

$\Rightarrow \quad x^2 = 16 \times 16$

$\Rightarrow \quad x = 16$

$\therefore$ Area of triangle

$= \frac{1}{2} \times$ base $\times$ height

$= \frac{1}{2} \times 16 \times 16$

$= 128$ cm^2

64. (2) Radius = $4x$ cm and slant height (l) = $7x$ cm

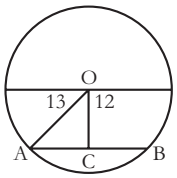
$\therefore \quad \pi rl = \frac{22}{7} \times 4x \times 7x = 792$

$\Rightarrow \quad x^2 = \frac{792 \times 7}{22 \times 4 \times 7} = 9$

$\therefore \quad x = 3$

$\therefore$ Radius = $4 \times 3 = 12$ cm

65. (3)



$AC = \sqrt{13^2 - 12^2}$

$= \sqrt{169 - 144}$

$= \sqrt{25} = 5$ cm

$\therefore \quad AB = 10$ cm

66. (3) $12x^4 - 56x^3 + 89x^2 - 56x + 12 = 0$

$\Rightarrow 12(x^4 + 1) - 56(x^3 + x) + 89x^2 = 0$

$\Rightarrow 12\left(x^2 + \frac{1}{x^2}\right) - 56\left(x + \frac{1}{x}\right) + 89 = 0$

[dividing the equations by x^2]

$\Rightarrow 12\left[\left(x + \frac{1}{x}\right)^2 - 2\right] - 56\left(x + \frac{1}{x}\right) + 89 = 0$

$\Rightarrow 12\left(x + \frac{1}{x}\right)^2 - 56\left(x + \frac{1}{x}\right) + 65 = 0$

putting, $\quad x + \frac{1}{x} = y$,

$12y^2 - 56y + 65 = 0$

$\Rightarrow \quad 12y^2 - 30y - 26y + 65 = 0$

$\Rightarrow \quad 6y(2y - 5) - 13(2y - 5) = 0$

$\Rightarrow \quad (2y - 5)(6y - 13) = 0$

$\Rightarrow \quad y = \frac{5}{2}$ or $\frac{13}{6}$

$\Rightarrow \quad x + \frac{1}{x} = \frac{5}{2}$ or $\frac{13}{6}$

Hence, value $\frac{7}{8}$ is not possible.

67. (4) $A = P\left(1 + \frac{R}{100}\right)^T$

$= 6000\left(1 + \frac{5}{100}\right)^2$

$= 6000 \times \frac{21}{20} \times \frac{21}{20}$

$= ₹\ 6615$

68. (1) $A = P\left(1 + \frac{R}{100}\right)^T$

$\Rightarrow \quad 4 = \left(1 + \frac{R}{100}\right)^2$

$\Rightarrow \quad 1 + \frac{R}{100} = 2 \Rightarrow R = 100$

69. (4) (A + B)'s 1 day's work = $\frac{1}{12}$

(B + C)'s 1 days's work = $\frac{1}{15}$

(C + A)'s 1 day's work = $\frac{1}{20}$

On adding,

2 (A + B + C)'s 1 days work

$= \frac{1}{12} + \frac{1}{15} + \frac{1}{20} = \frac{5+4+3}{60} = \frac{1}{5}$

$\therefore$ (A + B + C)'s 1 day's work = $\frac{1}{10}$

$\therefore$ B's 1 day's work = $\frac{1}{10} - \frac{1}{20}$

$= \frac{2-1}{20} = \frac{1}{20}$

$\therefore$ B alone can do the work in 20 days.

70. (2) Speed of car = v metre/minute.

Then, distance CD = distance coverd by car in 12 minutes = 12 v. metres.

Let the car will be take t minute to reach the tower AB from D then,

$DA = v \times t$ metres

Now, if the height of tower is h, then

In ΔABD,

$\frac{AB}{AD} = \tan 45°$

$\Rightarrow \quad \frac{h}{vt} = 1$

$\Rightarrow \quad h = vt \quad \ldots$ (i)

Again, in ΔABC,

$\frac{AB}{AC} = \tan 30°$

$\Rightarrow \frac{h}{(12v + vt)} = \frac{1}{\sqrt{3}}$

$\Rightarrow \quad h = \frac{(12 + t)v}{\sqrt{3}} \quad \ldots$ (ii)

From equation (i) and (ii)

$h = vt = \frac{(12 + t)v}{\sqrt{3}}$

$\Rightarrow \quad t\sqrt{3} = 12 + t$

$\Rightarrow t(\sqrt{3} - 1) = 12$

$\Rightarrow \quad t = \frac{12}{(\sqrt{3} - 1)}$

$= \frac{12(\sqrt{3} + 1)}{(\sqrt{3} - 1)(\sqrt{3} + 1)}$

$= \frac{12(\sqrt{3} + 1)}{3 - 1}$

$t = \frac{12}{2}(\sqrt{3} + 1)$

$= 6(\sqrt{3} + 1)$ minutes

71. (1) Average speed = $\left(\frac{2xy}{x + y}\right)$ kmph

$= \left(\frac{2 \times 12 \times 18}{12 + 18}\right)$ kmph

$= \left(\frac{2 \times 12 \times 18}{30}\right)$ kmph $= 14\frac{2}{5}$ kmph

72. (1) Part of the tank filled in 1 hour

$= \frac{1}{12} - \frac{1}{20} = \frac{5-3}{60} = \frac{1}{30}$

$\therefore$ Tank will be filled in 30 hours.

73. (2) Required answer = 16 + 8 + 20 = 44

74. (4) It is obvious from the graph.

75. (3) Required answer = 7 + 24 +14 = 45

PART-IV (ENGLISH LANGUAGE)

76. (3) As if/As though show condition. Post Conditional Tense should be used.

As if/As though should invariably be followed by a past conditional, and not by a present form ('would', not 'will'; 'was' or 'were' not 'is').

Hence, replace belongs to him by belonged to him should be used.

77. (4) Correct sentence.

78. (2) The plural number of 'Mother-in-law' is 'Mothers-in-law'.

79. (1) It is not proper to use 'the' before plural Noun.

Hence, How to solve the problem/ How to solve problems should be used.

80. (1) We ordered/asked the watchman should be used, as the sense shows order.

81. (3) Phrase 'brush somebody/ something—aside' means: to ignore; to treat something as unimportant; dismiss.

82. (3) She politely asked him **to release her hand.**

83. (1) Idiom 'give rise to something' means: to cause something to happen or exist.

84. (3) Here Present perfect continuous should be used because it expresses Past and Present time.

85. (3) The word **Veracity (Noun)** means: truth.

86. (1) Idiom 'follow in somebody's footsteps' means: to do the same job, have the same style of life etc. as somebody else.

87. (3) 'Have' in place of 'did'.

88. (2) 'Succour' in place of 'relief'.

89. (4) Correct sentence.

90. (3) 'Although' in place of 'as'.

91. (4) Correct spelling – Virtuous.

92. (3) Correct spelling – Aqueous.

93. (2) Correct spelling – Propitiate.

94. (4) Correct spelling – Flamboyant.

95. (1) Correct spelling – Mammal.

96. (1) Impact of the science on every sphere of life.

97. (4) The mode of approach is expository.

98. (4) Science has enabled man to harness the forces of nature to the advantage of mankind.

99. (4) Science has proved a great boon for mankind.

100. (2) Appropriate title of the passage – Science, a great boon.

❑❑❑

23

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 02 September, 2016

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–3): Find the odd words/letters/numbers from the given alternatives.

1. (1) AEFJ (2) KOPT
(3) UYZD (4) EHIL

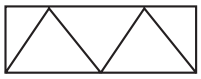
2. (1) 81 : 243 (2) 16 : 64
(3) 64 : 192 (4) 25 : 75

3. (1) Distinguish (2) Scatter
(3) Differentiate (4) Classification

4. Arrange the following words as per the English dictionary and find the last word.

Leaf, Less, Lean, Leave
(1) Lean (2) Leave
(3) Less (4) Leaf

5. How many triangles are there in the given figure?



(1) 6 (2) 7
(3) 8 (4) 5

6. In a certain code language, APPROACH is coded as CHOAPRAP. How will RESTRICT be coded?
(1) CTRISTER (2) ERTSIRTC
(3) CTRISTRE (4) TCIRSTRE

Directions (7–8): Select the related word/letter/number from the given alternative series.

7. Apes : Gibber : : Camels : ?
(1) Grunt (2) Cheep
(3) Bleat (4) Whine

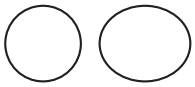
8. TSR : FED : : WVU : ?
(1) CAB (2) MLK
(3) PQS (4) GFH

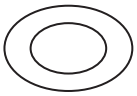
9. 7 : 32 : : 28 : ?
(1) 126 (2) 136
(3) 116 (4) 128

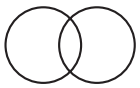
10. John, in the morning, started walking towards North and then turn towards opposite side of the Sun. He then turn left again and stops. Which direction is he facing now?
(1) North (2) West
(3) South (4) East

11. If 64 + 7 = 460 and 25 + 8 = 212 then, 43 + 8 = ?
(1) 360 (2) 376
(3) 332 (4) 356

12. In a village, there are landlords of which some are literate. Which of the following best expresses the relationship between them?

(1) 

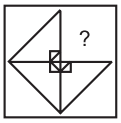
(2) 

(3) 

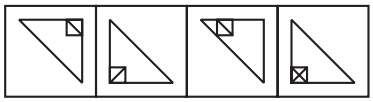
(4) None of these

13. Which one of the given figure completes the given figure?

Question Figure



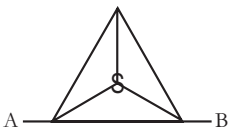
Answer Figures



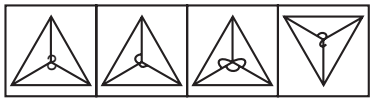
(1) (2) (3) (4)

14. What is the mirror image of the following figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

15. If the given words are arranged in descending order, then which of the following be last?
A. Sapling B. Plant
C. Seed D. Tree

(1) Sapling (2) Plant
(3) Seed (4) Tree

16. Which one is wrong number in the given series?

7, 56, 447, 3584, 2872

(1) 3584 (2) 56
(3) 7 (4) 447

17. In this question, a statement is followed by assumption I and II. You have to consider the statements to be true even if they seem to be at variance from the commonly known facts. You have to decide, which of the following assumptions logically follows from the given statement.

Statement: Only good singers are invited in the conference. No one without sweet voice is a good singer.

Assumption I: All invited singers in the conference have sweet voice.

Assumption II: Those singers who do not have sweet voice are not invited in the conference.

(1) Only I follows
(2) Neither I nor II follows
(3) Both I and II follow
(4) Only II follows

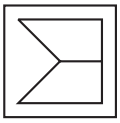
18. If '+' mean '×', '–' means '÷', '×' means '–' and '÷' means '+', then find the value of the following equation.

6 + 64 – 8 ÷ 45 × 8

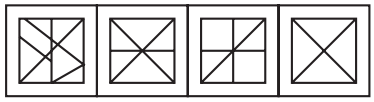
(1) 85 (2) 76
(3) 87 (4) 75

19. Which of the following has the given figure embedded in it?

Question Figure



Answer Figures

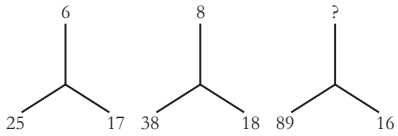


(1) (2) (3) (4)

20. 1, 4, 2, 3, 2, ?

(1) 2 (2) 5
(3) 3 (4) 4

21.



(1) 13 (2) 15
(3) 17 (4) 19

Directions (22–23): Find the missing number letter from the given alternatives.

22. AEN, MQZ, CGP, ?

(1) OSB (2) PUE
(3) MPX (4) OTC

23. 0, 4, 18, 48, ?, 180

(1) 58 (2) 68
(3) 84 (4) 100

24. Select the word, which cannot be formed using the letters of the given word?

SEGREGATION

(1) EAGER (2) SEA
(3) GATE (4) NATION

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets by two matrices given below. The columns and row of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column. Ex: 'U' can be represented by 03, 14, 32, etc. and 'O' can be represented by 56, 67, 75, etc. Similarly you have to identify the set for the word given in the question.

PURE

Matrix-I

	0	1	2	3	4
0	E	S	R	U	P
1	R	N	S	E	U
2	U	E	N	R	S
3	S	R	U	N	P
4	N	U	E	S	R

Matrix-II

	5	6	7	8	9
5	W	O	P	T	I
6	T	I	O	W	P
7	O	U	I	P	E
8	I	P	T	O	W
9	P	T	R	E	U

(1) 34, 76, 31, 79
(2) 34, 78, 77, 79
(3) 44, 51, 67, 76
(4) 34, 51, 76, 44

PART-II (GENERAL AWARENESS)

26. Which of the following is known as the Manchester of South India?

(1) Kochi
(2) Vishakapatnam
(3) Coimbatore
(4) Bengaluru

27. Who was the flag bearer of India at Rio Olympics 2016?

(1) PV Sindhu
(2) Jwala Gutta
(3) Yogeshwar Dutt
(4) Abhinav Bindra

28. Which of the following is the first cricketer to score 1000 runs in an innings?

(1) Sachin Tendulkar
(2) Vinod Kamble
(3) Pranav Dhanawade
(4) Virat Kohli

29. Which of the following is the largest irrigation plant in India?

(1) Buckingham Canal
(2) Indira Gandhi Canal
(3) Upper Ganges Canal
(4) Tajewala Canal

30. The soil of Kerala is rich in which of the following soils?

(1) Alluvial soil (2) Laterite soil
(3) Sandy soil (4) Loamy soil

31. Which of the process is known as nitrification?

(1) Reaction of nitrogen monoxide with oxygen to form nitric acid
(2) Reaction of nitrogen dioxide with water to form nitric acid
(3) Conversion of ammonia to nitrites
(4) Conversion of nitrite to nitric oxide

32. Asbestos is found maximum in which of the following countries?

(1) Australia (2) Canada
(3) Africa (4) Russia

33. Which country announces the imposition of a three month State emergency after failed coup?

(1) Turkey (2) Syria
(3) Sudan (4) Iran

34. Beighton Cup is related to which of the following sports?

(1) Football (2) Hockey
(3) Badminton (4) Cricket

35. Sun temple is situated in which of the following States?

(1) Odisha (2) Gujarat
(3) Karnataka (4) Tamil Nadu

36. The growth of bacteria is measured by
(1) Hemacytometer
(2) Spectrophotometer
(3) Calorimeter
(4) Auxanometer

37. The sideways erosion, which widens the river valley, called
(1) Lateral corrosion
(2) Vertical corrosion
(3) Side corrosion
(4) Mean corrosion

38. The Constitution
(1) is silent on the President's re-election to the office
(2) allows re-election of a person to the President's post
(3) restricts a person to remain President for only two terms
(4) has been amended to allow a person only one term as President

39. Smooth muscles are likely to be found in
(1) muscles of legs
(2) muscles of arms
(3) stomach
(4) heart

40. Synagogue is the place of worship of
(1) Zoroastrianism
(2) Taoism
(3) Judaism
(4) Shintoism

41. The civilian airport of highest altitude is in
(1) Tibet (2) Nepal
(3) India (4) China

42. The branch of biology, which deals with extinct organisms, is called
(1) Palynology
(2) Phylogeny
(3) Palaeobotany
(4) Palaentology

43. The least distance of distinct vision is
(1) 35 cm (2) 25 cm
(3) 45 cm (4) 15 cm

44. When will demand become a grant?
(1) When a demand is proposed
(2) After the discussion on demand is over
(3) After the demand is granted
(4) When the budget session is closed

45. Summer rains in Australia broadly decreases from
(1) East to West
(2) West to East
(3) North to South
(4) South to North

46. The blue revolution is related with
(1) Fish Production
(2) Foodgrain Production
(3) Oil Seed Production
(4) Milk Production

47. Which is post-harvest folk dance in Assam?
(1) Ankia Nat (2) Bihu
(3) Raut Nacha (4) Namgen

48. The substrate of photorespiration is
(1) Fructose (2) Pyruvic acid
(3) Glycolate (4) Glucose

49. The UNIX operating system is suitable for
(1) Multi User
(2) Real-time Processing
(3) Distributed Processing
(4) Single User

50. Sink hole is a phenomenon of
(1) Plain (2) Desert
(3) Tundra (4) Karst

PART-III
(QUANTITATIVE APTITUDE)

51. A number when divided by 6 leaves remainder 3. When the square of the same number is divided by 6. The remainder is
(1) 0 (2) 2
(3) 1 (4) 3

52. Find the wrong number in the given series.

3, 7, 16, 35, 70, 135
(1) 70 (2) 16
(3) 153 (4) 35

53. The averages of runs scored by a player in 11 innings is 63 and the average of his first six innings is 60 and the average of last six innings is 65. Find the runs scored in sixth inning.
(1) 60 (2) 54
(3) 67 (4) 57

54. In a parade of school students, the number of boys and girls are in the ratio of 9 : 7 respectively and the total number of boys and girls are 256. Find the number of girls.
(1) 102 (2) 112
(3) 118 (4) 128

55. Two persons ride towards each other from two places 55 km apart, one riding at 12 km/h and the other at 10 km/h. When will they be 11 km apart?
(1) 2 h and 30 min
(2) 1 h and 30 min
(3) 2 h
(4) 2 h and 45 min

56. A train 150 m long passes a telegraphic post in 12 seconds. Find the speed of the train.
(1) 50 km/h (2) 12.5 km/h
(3) 25 km/h (4) 45 km/h

57. At an election, a candidate secures 40% of the votes, but is defeated by the other candidate by a majority of 298 votes. Find the total number of votes recorded.
(1) 1580 (2) 1490
(3) 1470 (4) 1530

58. If $x - \frac{1}{x} = 2$, then what is the value of $x^2 + \frac{1}{x^2}$?
(1) 4 (2) 5
(3) 3 (4) 6

59. The ratio between the height of tower and the point at some distance is $5\sqrt{3} : 5$ what will be the angle of elevation?
(1) 30° (2) 60°
(3) 90° (4) 45°

60. Successive discount of 20% and 10% is given on an item of ₹ 700, find the selling price.
(1) 504 (2) 196
(3) 582 (4) 601

61. The population of a State is 20000. It increases by 20% during the first

year and 30% during the second year. The population after two years will be

(1) 32000 (2) 40000
(3) 31200 (4) 30000

62. A reduction of 20% in the price of rice enable a buyer to buy 5 kg more for ₹ 1200. The reduced price per kg of rice will be:

(1) 36 (2) 45
(3) 48 (4) 60

63. A man spends 60% of his income on different expenditures. His income is increased by 20% and his expenditure also increased by 10%. Find the percentage decrease in his saving?

(1) 10% (2) 15%
(3) 20% (4) 25%

64. The length of side AB and side BC of a scalene triangle ABC are 12 cm and 8 cm respectively. The size of angle C is 59°. Find the length of side AC.

(1) 12 (2) 10
(3) 14 (4) 16

65. Find the value of

$$\left(\frac{\sin 27^\circ}{\cos 63^\circ}\right)^2 + \left(\frac{\cos 63^\circ}{\sin 27^\circ}\right)^2$$

(1) 0 (2) 2
(3) 3 (4) 1

66. The sum of the age of mother and a mother and her daughter is 60 years. 12 years ago the mother was eight times as old as her daughter.

How old is the daughter at present?

(1) 20 year (2) 28 year
(3) 16 year (4) 12 year

67. In one hour, a boat goes 12 km along the stream and 8 km against the stream. The speed of the boat in still water is

(1) 12 km/h (2) 11 km/h
(3) 10 km/h (4) 8 km/h

68. A shopkeeper buys 80 articles for ₹ 2400 and sells them for a profit of 16%. Find the selling price of one article.

(1) ₹ 36.40 (2) ₹ 34.80
(3) ₹ 35.60 (4) ₹ 33.80

69. Find the amount which Shyam will get on ₹ 4096, if he gave it for 18 months at $12\frac{1}{2}\%$ per annum, interest being compounded half yearly.

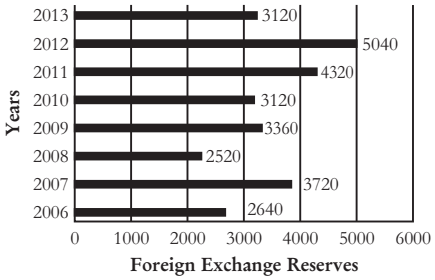
(1) ₹ 5813 (2) ₹ 4515
(3) ₹ 4913 (4) ₹ 5713

70. A works twice as fast as B. If B can complete a piece of work independently in 12 days, then what will be the number of days taken by A and B together to finish the work?

(1) 4 (2) 6
(3) 8 (4) 18

Directions (71–73): Study the graph carefully to answer these questions.

Foreign Exchange Reserves of a country (in $ million)



71. The foreign exchange reserve in 2012 was how many times that in 2009?

(1) 0.7 (2) 1.2
(3) 1.4 (4) 1.5

72. What was the percentage increase in the foreign reserves in 2012 over 2008?

(1) 100% (2) 150%
(3) 200% (4) 620%

73. The ration of the number of years, in which the foreign exchange reserves are above the average reserves, to those in which reserves are below the average reserves is

(1) 2 : 6 (2) 3 : 4
(3) 3 : 5 (4) 1 : 1

74. A well of diameter 3 m is dug 14 m deep. The Earth taken out of it has been spread evenly all around it in the shape of a circular ring of width 4 m to form and embankment. Find the height of the embankment.

(1) 4.25 m (2) 2.250 m
(3) 1.125 m (4) 1.750 m

75. If $x^3 + \frac{1}{x^3} = 110$, then find the value of $x + \frac{1}{x}$.

(1) 2 (2) 3
(3) 4 (4) 5

PART-IV (ENGLISH LANGUAGE)

Directions (76–77): Choose the word, which is most similar in meaning to the given words.

76. Dishevelled

(1) Tidy (2) Clean
(3) Neat (4) Untidy

77. Venerate

(1) Despise (2) Disobey
(3) Disregard (4) Revere

Directions (78–79): Choose the word, which is most opposite in meaning to the given words.

78. Congenial

(1) Accord (2) Snug
(3) Engaging (4) Unpleasant

79. Abjure

(1) Renounce (2) Relinquish
(3) Abnegate (4) Acquire

Directions (80–82): In the following questions, out of the four alternatives, choose the one which can be substituted for the given words/sentence.

80. Highly skilled

(1) Consummate (2) Inveterate
(3) Notorious (4) Maladroit

81. Identification with the feelings of another

(1) Sympathy (2) Empathy
(3) Apathy (4) Compassion

82. Insatiable desire for wealth

(1) Selfish (2) Avarice
(3) Egoist (4) Generosity

Directions (83–85): In these questions, four alternatives are given for the idiom/phrase given in **bold**. Choose the alternative which best expresses the meaning of the idiom/phrase.

83. Cut the mustard
(1) To get under expectations
(2) To score average
(3) To perform well
(4) To underperform

84. A chip off the old block
(1) Reminds them of one's father
(2) To remind one's sin
(3) Reminds them of one's son
(4) Reminds of previous memories

85. To fish in troubled waters
(1) To indulge in evil conspiracies
(2) To make a profit out of disturbance
(3) To aggravate the situation
(4) To make the most of bad bargain

Directions (86–87): In these questions, a part of sentence is underlined. Below are given alternatives to the underlined part, which may improve the sentence. Choose the correct alternative. In case to improvement is needed, mark 'No improvement' as your answer.

86. What <u>you have been</u> doing since the workshop last month?
(1) have you done
(2) you have done
(3) have you been doing
(4) No improvement

87. Corruption is <u>the most serious</u> problem in India.
(1) the more serious
(2) very serious
(3) serious
(4) No improvement

Directions (88–91): Each of the following sentences has a blank space and four words given after the sentence. Select whichever word you consider most appropriate for the blank space.

88. Sid and Harsh are ..... unable to complete the task.
(1) neither (2) either
(3) each (4) both

89. The examinee could guess ..... the answer correctly.
(1) at (2) about
(3) through (4) to

90. Be ..... and always look to the comfort of others.
(1) considerate (2) cautious
(3) considerable (4) consider

91. As usual, a lot of people were ..... in the king's darbar.
(1) their (2) possess
(3) past (4) present

92. In this question, four words are given out of which one is incorrectly spelt. Find the incorrectly spelt word.
(1) Ommineous (2) Omineous
(3) Ominous (4) Omenous

Directions (93–96): In the following questions, a sentence has been given in parts, out of which a part contains an error. The part with the error is your answer. In case there is no error, then your answer is 'No error'.

93. He ought not/have done such/a filthy thing.
(1) He ought not
(2) have done such
(3) filthy thing
(4) No error

94. The reason for/his failure is because/he did not work hard.
(1) The reason for
(2) His failure is because
(3) He did not work hard
(4) No error

95. I have reached/the office before/the rain started.
(1) I have reached
(2) The office before
(3) The rain started
(4) No error

96. A large/consignment of books/are expected.
(1) A large
(2) Consignment of books
(3) are expected
(4) No error

Directions (97–100): Read the following passage carefully answer the questions given below in the context of the passage.

Every profession or trade, every art and every science has its technical vocabulary, the function of which is partly to designate things or processes which have no names in ordinary English and partly to secure greater exactness in nomenclature. Such special dialects or jargons renecessary in technical discussion of any kind. Being universally understood by the devotees of the particular science or art, they have the precision of a mathematical formula. Besides, they save time, for it is much more economical to name a process than to describe it. Thousands of these technical terms are very properly included in every large dictionary, yet as a whole, they are rather on the outskirts of the English language than actually within its borders.

Different occupations, however, differ widely in the character of their special vocabularies. In trades and handicrafts and other vacations like farming and fishing that have occupied great numbers of men from remote times, the technical vocabulary is very old. An average man now uses these in his own vocabulary. The special dialects of law, medicine divinity and philosophy have become familiar to cultivate persons.

97. Special words used in technical discussion
(1) may become part of common speech
(2) never last long
(3) should resemble mathematical formula
(4) should be confined to scientific fields

98. The writer of this article is
(1) a scientist (2) a politician
(3) a linguist (4) a businessman

99. This passage is primarily concerned with
(1) various occupations and professions
(2) technical terminology
(3) scientific undertakings
(4) a new language

100. It is true that
(1) various occupations and professions often interchange words
(2) there is always a non-technical word that may be substituted for the technical word
(3) the average man often uses in his own vocabulary what was once technical language not meant for him
(4) everyone is interested in scientific findings.

Short Answers

1. (4)	**2.** (2)	**3.** (1)	**4.** (3)	**5.** (4)	**6.** (3)	**7.** (1)	**8.** (2)	**9.** (3)	**10.** (3)
11. (4)	**12.** (3)	**13.** (4)	**14.** (1)	**15.** (3)	**16.** (2)	**17.** (3)	**18.** (1)	**19.** (2)	**20.** (4)
21. (2)	**22.** (1)	**23.** (4)	**24.** (4)	**25.** (a)	**26.** (3)	**27.** (4)	**28.** (3)	**29.** (2)	**30.** (2)
31. (3)	**32.** (4)	**33.** (1)	**34.** (2)	**35.** (1)	**36.** (2)	**37.** (1)	**38.** (2)	**39.** (3)	**40.** (3)
41. (1)	**42.** (4)	**43.** (2)	**44.** (3)	**45.** (3)	**46.** (1)	**47.** (2)	**48.** (3)	**49.** (1)	**50.** (4)
51. (4)	**52.** (1)	**53.** (4)	**54.** (2)	**55.** (3)	**56.** (4)	**57.** (2)	**58.** (4)	**59.** (2)	**60.** (1)
61. (3)	**62.** (3)	**63.** (1)	**64.** (2)	**65.** (2)	**66.** (3)	**67.** (3)	**68.** (2)	**69.** (3)	**70.** (1)
71. (4)	**72.** (1)	**73.** (3)	**74.** (4)	**75.** (4)	**76.** (4)	**77.** (4)	**78.** (4)	**79.** (4)	**80.** (1)
81. (2)	**82.** (2)	**83.** (3)	**84.** (1)	**85.** (2)	**86.** (3)	**87.** (4)	**88.** (4)	**89.** (1)	**90.** (1)
91. (4)	**92.** (3)	**93.** (1)	**94.** (2)	**95.** (1)	**96.** (3)	**97.** (1)	**98.** (3)	**99.** (2)	**100.** (3)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

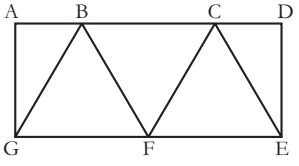
1. (4) A $\xrightarrow{+4}$ E $\xrightarrow{+1}$ F $\xrightarrow{+4}$ J
K $\xrightarrow{+4}$ O $\xrightarrow{+1}$ P $\xrightarrow{+4}$ T
U $\xrightarrow{+4}$ Y $\xrightarrow{+1}$ Z $\xrightarrow{+4}$ D
E $\xrightarrow{+3}$ H $\xrightarrow{+1}$ I $\xrightarrow{+3}$ L

2. (4) $81 \times 3 = 243$
$16 \times 4 = 64$
$25 \times 3 = 75$
$64 \times 3 = 192$

3. (1) Except option (1), all others are related to separate.

4. (3) Arrangement as per English dictionary:
Leaf → Lean → Leave → (Less)

5. (4)



Triangles → ABG, BGF, BFC, CFE, DCE
Total triangles in the figure = 5

6. (3)

AP	PR	OA	CH
(4)	(3)	(2)	(1)
CH	PR	OA	AP

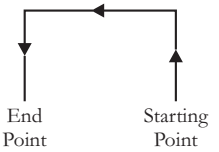
RE	ST	RI	CT
(4)	(3)	(2)	(1)
CT	RI	ST	RE

7. (1) Sound of apes → Gibber
Sound of Camels → Grunt

8. (2) T $\xrightarrow{-1}$ S $\xrightarrow{-1}$ R
F $\xrightarrow{-1}$ E $\xrightarrow{-1}$ D
W $\xrightarrow{-1}$ V $\xrightarrow{-1}$ U
M $\xrightarrow{-1}$ L $\xrightarrow{-1}$ K

9. (3) $7 \times 4 + 2 = 32$
$\therefore\ 28 \times 4 + 2 =$ (116)

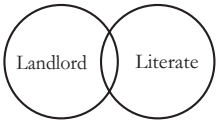
10. (3)



Hence, John in facing south direction.

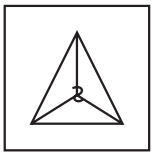
11. (4) $64 + 7 = 460$
$\Rightarrow\ 64 \times 7 + 12 = 460$
and $25 + 8 = 212$
$\Rightarrow\ 25 \times 8 + 12 = 212$
$\therefore\ 43 + 8 = ?$
$\Rightarrow\ 43 \times 8 + 12 =$ (356) $= ?$

12. (3)



13. (4)

14. (1)



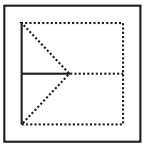
15. (3) Descending order:
Tree (D) → Plant (B) → Sapling (A) → Seed (C)

16. (2) 7 56 447 (448) 3584
×8 ×8 ×8

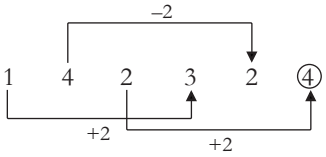
17. (3) On the basis of given statement, we could say that both assumption I and II follow.

18. (1) $6 + 64 - 8 \div 45 \times 8$
After changing the sign,
$6 \times 64 \div 8 + 45 - 8$
$= \frac{6 \times 64}{8} + 45 - 8$
$= 6 \times 8 + 45 - 8$
$= 48 + 45 - 8$
$= 93 - 8 = 85$

19. (2)



20. (4) 1 4 2 3 2 ④

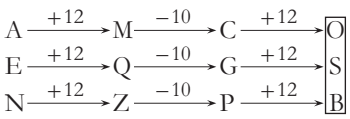


21. (2) $25 + 17 = 42 \Rightarrow \frac{42}{7} = 6$

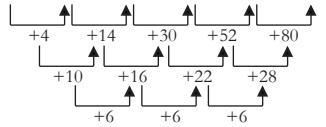
$38 + 18 = 56 \Rightarrow \frac{56}{7} = 8$

$\therefore \quad 89 + 16 = 105 \Rightarrow \frac{105}{7} = (15)$

22. (1)



24. (4) 0 4 18 48 (100) 180



24. (4) By using the letters of given word, word 'NATION' cannot be formed because in the given word, letter N is used only once.

25. (1) For given word PURE, group of letters can be represented by the numbers 34, 76, 31, 79.

PART-II (GENERAL AWARENESS)

26. (3) Coimbatore also known as Kovai, is a major city in the south indian state of Tamil Nadu. It is called 'Manchester of South India' due to its cotton production and textile industries.

27. (4) Abhinav Bindra was the flag bearer of India contingent at the 31st Olympics at Rio 2016. Athlete Purma Banerjee was the first Indian Olympian to become the flag bearer for the Indian Contingent at the 1920 Olympic in Antwerp, Belgium.

28. (3) Pranav Dhanawade become first cricketer to score 1000 runs in an inning. Cricket got its first 1000-run man on January 5, 2016, when Mumbai's 15 year old school cricketer became the only batsman in the history of the game to achieve the landmark in a single knock.

29. (2) Indira Gandhi canal project is the largest irrigation plant in India. It starts from the Harike. Barrage at Firozpur, a few kilometres below the confluence of the Satluj and Beas river in the Indian State of Punjab.

30. (2) Laterite soil of Kerala are localised in occurrence and are found in southern and western part. These soils occur in catenary sequence along with laterites. The soils have brown colour, which has been attributed to the presence of hematite or anhydrous ferric oxides. It covers about 65% of the total area of Kerala.

31. (3) Nitrification is the biological oxidation of ammonia or ammonium to nitrate. The oxidation of ammonia into nitrite is performed by two groups of organisms-Ammonia Oxidising Bacteria (AOB) and Ammonia Oxidising Archaea (AOA).

32. (4) Russia is the world largest producer of Asbestos. Russia produce around 1.1 millionmetric tonnes, annually. It supply 55% of the world Asbestos demand in the world. Russia produces more than whole world combined production of Asbestos.

33. (1) Turkey's President Recep Tayyip Erdogan declared three month State of emergency following a botched coup attempt. According to President, this measure will counter threats to Turkish democracy.

34. (2) Beighton Cup is one of the oldest field hockey tournament running till date. Instituted in 1895, it is organised by Bengal Hockey Association. The Beighton Cup was presented by TD Beighton, legal remembrances of the government of Bengal.

35. (1) Sun temple is situated at Konark in Odisha, India. It is believed that the temple was built by King Narasimhadeva I of eastern Ganga dynasty in 1255 CE. The temple is a UNESCO world heritage site and has also featured on various list of seven wonders of India.

36. (2) The measurement of a exponential bacterial growth is done with the use of the spectrophoto meter. A spectro photo meter is used to determine turbidity by measuring the amount of light that passed through suspension of cells.

37. (1) The middle course of river has more energy and volume then in the upper course. The gradient is more gentle and lateral erosion has widened the channel. The river valley also become deeper.

38. (2) The Article-57 of Indian Constitution allows re-election of a person to the President's post. This provision was not there in original constitution. It is added by an amendment.

39. (3) Smooth muscles are an involuntary non-striated muscle. Most smooth muscle is of the single unit variety, that is either the whole muscle contracts or the whole muscle relaxes. Single unit smooth muscle, is most common in lines blood vessels, the urinary tract and the digestive tract or stomach.

40. (3) Synagogue is a Jewish house of prayer. Synagogues have a large hall for prayer and are consecrated spaces used for the purpose of prayer, Torah reading, study and assembly. However a synagogue is not necessary for worship.

41. (1) World highest civilian airport is in Tibet, standing at 4411 m above sea level. It is already half the height of a plane's average cruising altitude. It is a restive and remote Tibetan region of South-Western Sichuan province.

42. (4) Palaentology is the scientific study of life that existed prior to the start of the Holocene. It includes the study of fossils to determine organisms' evolution and interactions with each other and their environments.

43. (2) Least distance of distinct vision for a normal human being is 25 cm, however, it varies with age. For infants, the least distance of distinct vision is

about 5 to 8 cm. As the perosn grows old, his culinary muscles responsible for adjusting the eye lens get weakened.

44. (3) Demand for grants is the form in which estimates of expenditure from the consolidated fund, included in the annual financial statement and required to be voted in the Lok Sabha. A demand become a grant after the demand is granted.

45. (3) More than 80% of the continent has an annual rainfall of less than 600 mm. The tropical areas of northern Australia have a wet summer because of the monsoon and its intensity decreases towards South.

46. (1) The term 'blue revolution' refers to the remarkable emergence of aquaculture. Aquaculture refers to all forms of active culturing of aquatic animals and plants, occurring in marine, brackish or fresh water.

47. (2) Bihu is the post-harvest folk dance in Assam. The Bihu is a group dance in which males and females dance together but maintain different gender roles. The dance is performed in accompaniment with traditional Bihu music.

48. (3) The oxygen sensitivity of glycolate-stimulated CO_2 production was found to be compatible with the proposal that glycolate is a substrate of photo respiration.

49. (1) UNIX is a family of multitasking, multiuser computer operating system that derive from the original AT & T Unix. It was developed in the 1970s at the Bell Labs research centre.

50. (4) A sink hole is a depression or hole in the ground caused by some form of collapse of the surface layer. Some are caused by karst processes. Sink holes vary in size form 1 m to 600 m both in diameter and depth.

PART-III (QUANTITATIVE APTITUDE)

51. (4) We known that if a number or square of a number is divided by the same number, remaidner is same in both the conditions.

Hence, square of a number is divided by 6, we get 3 as remainder.

52. (1)

3	7	16	35	74	153
	×2+1	×2+2	×2+3	×2+4	×2+5

53. (4) ∵ Average score of runs of 11 innings = 63

∴ Total score of runs of 11 innings
$= 11 \times 63 = 693$

∵ Average score of runs of first 6 innings = 60

∴ Total score of runs of 6 innings
$= 6 \times 60 = 360$

Now, average score of runs of last 6 innings = 65

∴ Total score of runs of last 6 innings
$= 6 \times 65 = 390$

Hence, Total runs scored in sixth innings $= 360 + 390 - 693$
$= 750 - 693 = 57$

54. (2) Number of boys and girls $= 9x$ and $7x$

Given,

Total number of boys and girls = 256

∴ Number of girls

$$= \frac{7x}{(9x + 7x)} \times 256$$

$$= \frac{7x \times 256}{16x}$$

$$= \frac{7 \times 256}{16}$$

$$= 7 \times 16 = 112$$

55. (3) Relative speed of both persons
$= 12 + 10 = 22$ km/h

Now, distance between both of them
$= 55 - 11 = 44$ km

∴ Time, when distance is 11 km between both of them

$$= \frac{\text{Total distance}}{\text{Relative speed}}$$

$$= \frac{44}{22} = 2 \text{ h}$$

Hence, they will be apart 11 km after 2 h.

56. (4) Length of train = 150 m

$$= \frac{150}{1000} \text{ km} = \frac{3}{20} \text{ km}$$

$$\text{Time} = 12\text{s} = \frac{12}{60 \times 60} \text{ h}$$

$$= \frac{1}{30} \text{ h}$$

∴ Speed of train

$$= \frac{\frac{3}{20}}{\frac{1}{300}} = \frac{3 \times 300}{20 \times 1}$$

$$= 45 \text{ km/h}$$

57. (2) Total number of votes recorded $= x$

Now, according to the question,

(60% of x) – (40% of x) = 298

20% of x = 298

$$\Rightarrow x \times \frac{20}{100} = 298 \quad \Rightarrow \frac{x}{5} = 298$$

$$\Rightarrow x = 5 \times 298 \quad \Rightarrow x = 1490$$

58. (4) Given, $x - \frac{1}{x} = 2$

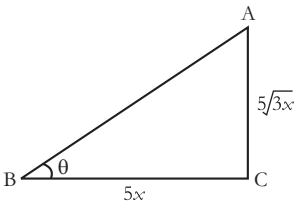
Now, squaring both sides,

$$\Rightarrow \quad x^2 + \frac{1}{x^2} - 2 = 4$$

$$\Rightarrow \quad x^2 + \frac{1}{x^2} = 4 + 2$$

$$\Rightarrow \quad x^2 + \frac{1}{x^2} = 6$$

59. (2)



Height of tower $= 5\sqrt{3x}$

and distance of a point $= 5x$

Let, angle of elevation = θ

Then, In ΔABC,

$$\tan\theta = \frac{AC}{BC}$$

$$\Rightarrow \quad \tan\theta = \frac{5\sqrt{3x}}{5x}$$

$$= \sqrt{3}$$

$$\Rightarrow \quad \tan\theta = \sqrt{3} = \tan 60°$$

$$\Rightarrow \quad \theta = 60°$$

60. (1) Here, $r_1 = 20\%$, $r_2 = 10\%$ and marked price = ₹ 700

∴ SP of an item

$$= 700 \left(\frac{1 - 20}{100}\right)\left(\frac{1 - 10}{100}\right)$$

$= 700 \times \frac{80}{100} \times \frac{90}{100}$

$= 7 \times 8 \times 9 = ₹\ 504$

61. (3) Population after two years

$= 20000\left(1+\frac{20}{100}\right)\left(1+\frac{30}{100}\right)$

$= 20000 \times \frac{120}{100} \times \frac{130}{100}$

$= 2 \times 120 \times 130 = 31200$

62. (3) Initial price of rice = ₹ x per kg

Now, a reduction of 20% in price.

Reduced price of rice

$= x \times \frac{80}{100} = ₹\ \frac{4x}{5}$ per kg

Now, according to the question,

$$\frac{1200}{\frac{4x}{5}} - \frac{1200}{x} = 5$$

$$\Rightarrow \quad \frac{6000}{4x} - \frac{1200}{x} = 5$$

$$\Rightarrow \quad \frac{1500}{x} - \frac{1200}{x} = 5$$

$$\Rightarrow \quad \frac{300}{x} = 5$$

$\Rightarrow x = \frac{300}{5} = 60 \Rightarrow x = ₹\ 60$

$\therefore$ Reduced price of rice

$= \frac{4x}{5} = \frac{4 \times 60}{5} = ₹\ 48$ per kg

63. (1) Income of a person = ₹ 100

Spend on different expenses = ₹ 60

$\therefore$ Total saving = 100 – 60 = ₹ 40

Now, income after increment of 20%

$= \frac{120}{100} \times 100 = ₹\ 120$

and expences after increment of 10%

$= 120 \times (60 + 10)\%$

$= 120 \times \frac{70}{100} = ₹\ 84$

$\therefore$ New saving = 120 – 84 = ₹ 36

Now, percentage decrease

$= \left(\frac{40-36}{40}\right) \times 100$

$= \frac{4}{40} \times 100 = \frac{100}{10}$

$= 10\%$

64. (2) Given, $\angle C = 59° \approx 60°$, a = 12 cm, b = 8 cm

Now, by cosine formula,

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

$$\Rightarrow \quad \cos 60° = \frac{(12)^2 + (8)^2 - (c)^2}{2 \times 12 \times 8}$$

$$\Rightarrow \quad \frac{1}{2} = \frac{144 + 64 - (c)^2}{192}$$

$$\Rightarrow \quad \frac{1}{2} = \frac{208 - c^2}{192}$$

$\Rightarrow 416 - 2c^2 = 192$

$\Rightarrow 2c^2 = 416 - 192$

$\Rightarrow 2c^2 = 224 \Rightarrow c^2 = 112$

$\Rightarrow c = \sqrt{112} \approx 10.58$

$\Rightarrow c = 10.58 \approx 10$

$\therefore c = 10$ cm

65. (2) $\left(\frac{\sin 27°}{\cos 63°}\right)^2 + \left(\frac{\cos 63°}{\sin 27°}\right)$

$= \left[\frac{\sin(90° - 63°)}{\cos 60°}\right]^2 + \left[\frac{\cos 63°}{\sin(90° - 63°)}\right]$

$= \left(\frac{\cos 63°}{\cos 63°}\right)^2 + \left(\frac{\cos 63°}{\cos 63°}\right)$

$= (1)^2 + (1) = 1 + 1 = 2$

66. (3) Present age of mother = M years and present age of daughter = D years

Now, according to the question,

$M + D = 60$ ... (i)

and $(M - 12) = 8\,(D - 12)$

$\Rightarrow \quad M - 12 = 8D - 96$

$\Rightarrow \quad M - 8D = -84$ .... (ii)

Now, solving equations (i) and (ii), we have

$D = 16$ years

Hence, present age of daughter = 16 years

67. (3) Speed of boat = $\frac{1}{2}$

(Downstream speed + Upstresm speed)

$= \frac{1}{2}\left(\frac{12}{1} + \frac{8}{1}\right) = \frac{1}{2}(12 + 8)$

$= \frac{1}{2} \times 20 = 10$ km/h

68. (2) $\because$ CP of 80 articles = ₹ 2400

$\therefore$ CP of 1 article $= \frac{2400}{80} = ₹\ 30$

Now, SP of 1 article at profit of 16%

$= \frac{30 + 30 \times 16}{100} = 30 + 4.80$

$= ₹\ 34.80$

69. (3) Here, P = ₹ 4096,

$R = 12\frac{1}{2}\% = \frac{25}{2}\%$,

T = 18 months $= \frac{18}{12} = \frac{3}{2}$ yr

Now, money received to Shyam

$= 4096\left(1 + \frac{25}{2 \times 100} \times \frac{1}{2}\right)^{\frac{3}{2} \times 2}$

$= 4096\left(1 + \frac{1}{16}\right)^3 = 4096\left(\frac{17}{16}\right)^3$

$= 4096 \times \frac{17}{16} \times \frac{17}{16} \times \frac{17}{16}$

$= 17 \times 17 \times 17 = ₹\ 4913$

70. (1) Time taken to complete the work by B = 12 days

$\because$ A work twice as fast as B

$\therefore$ Time taken to complete the work by A = 6 days

Now, one day work of B $= \frac{1}{12}$

and one day work of A $= \frac{1}{6}$

$\therefore$ One day work of (A + B)

$= \frac{1}{6} + \frac{1}{12} = \frac{2+1}{12}$

$= \frac{3}{12} = \frac{1}{4}$

Hence, Time taken by A and B together to finish the work = 4 days

71. (4) Required answer

$= \frac{\text{Foreign exchange reserves in 2012}}{\text{Foreign exchange reserves in 2009}}$

$= \frac{5040}{3360} = \frac{504}{336} = \frac{63}{42} = \frac{3}{2} = 1.5$

Hence, in the year 2012, foreign exchange reserves was 1.5 times in comparison to the year 2009.

72. (1) Required percentage increase

$= \left(\frac{5040 - 2520}{2520}\right) \times 100$

$= \frac{2520}{2520} \times 100 = 100\%$

73. (3) Average of foreign exchange reserve

$= \frac{1}{8}$ [2640 + 3720 + 2520 + 3360 + 3120 + 4320 + 5040 + 3120]

$= \frac{1}{8} \times 27840 = 3480$

Now, number of years in which the foreign exchange reserves are above the average reserves = 2007, 2011, 2012 = 3 years and number of years in which the foreign exchange reserves are below the average reserves = 2006, 2008, 2009, 2010, 2013 = 5 years.

$\therefore$ Required ratio = 3 : 5

74. (4) Height of embankment = h m

Given, radius of well = $\frac{3}{2}$ = 1.5 m

$\therefore \frac{4}{3} \times \frac{22}{7} \times [(4)^2 - (1.5)^2] \times h$

$= \frac{22}{7} \times (1.5)^2 \times 14$

$\Rightarrow \frac{4}{3} \times (16 - 2.25) \times h = 2025 \times 14$

$\Rightarrow \frac{4}{3} \times 13.75 \times h = 2.25 \times 14$

$\Rightarrow h = \frac{2.25 \times 14 \times 3}{4 \times 13.75}$

$\Rightarrow h = \frac{225 \times 7 \times 3}{2 \times 1375}$

$\Rightarrow h = \frac{189}{110}$

$= 1.718 \approx 1.75 \Rightarrow h = 1.75$ m

75. (4) Given,

$\left(x^3 + \frac{1}{x^3}\right) = 110$

$\Rightarrow \left(x + \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2} - 1\right) = 110$

$[\because a^3 + b^3 = (a + b)(a^2 + b^2 - ab)]$

$\Rightarrow \left(x + \frac{1}{x}\right)\left[\left(x + \frac{1}{x}\right)^2 - 2 - 1\right] = 110$

$[\because a^2 + b^2 = (a + b)^2 - 2ab]$

$\Rightarrow \left(x + \frac{1}{x}\right)\left[\left(x + \frac{1}{x}\right)^2 - 3\right] = 110$

Now, Putting

$\left(x + \frac{1}{x}\right) = A$

$\Rightarrow A(A^2 - 3) = 110$

$\Rightarrow A^3 - 3A = 110$ ... (i)

Now, from option (4), putting A = 5 in Eq. (i)

$\Rightarrow 5^3 - 3 \times 5 = 110$

$\Rightarrow 125 - 15 = 110$

$\Rightarrow 110 = 110$

$\therefore A = 5$

$\therefore \left(x + \frac{1}{x}\right) = 5$

PART-IV (ENGLISH LANGUAGE)

76. (4) 'Dishevelled' means untidy.

77. (4) 'Venerate' means to show a lot of respect. All other options means to dislike or have no respect.

78. (4) 'Congenial' means pleasant or welcoming.

79. (4) 'Abjure' means to promise to reject a belief or a way of behaving. All other options mean to reject, deny or give up.

80. (1) 'Consummate' means complete and its synonym is highly skilled.

81. (2) 'Empathy' means the ability to understand and share the feelings of another.

82. (2) 'Avarice' means extreme or insatiable desire for wealth.

83. (3) The idiom 'cut the mustard' means to perform well and succeed.

84. (1) The idiom 'a chip off the old block' means someone who closely resembles their parent in character or appearance.

85. (2) The idiom 'to fish in troubled waters' means to take advantage or to make a profit out of disturbance.

86. (3) The helping verb (have) will come before the subject (you) in case of an interrogative sentence.

87. (4) No improvement required for this sentence.

88. (4) Sid and Harsh are **both** unable to complete the task.

89. (1) The examinee could guess **at** the answer correctly.

90. (1) Be **considerate** and always look to the comfort of others.

91. (4) As usual, a lot of people were **present** in the king's darbar.

92. (3) Correct spelling → Ominous

93. (1) Part (1) has error. The correct expression should be 'He ought not to'.

94. (2) Part (2) has error. Using the word 'because' with the word 'reason' is not required. It should be 'The reason for his failure is that he did not work hard'.

95. (1) Part (1) has error. The sentence is in Past Perfect Tense. It should be 'I had reached the office before the rain started.'

96. (3) Part (3) has error. The subject is singular, therefore the verb must be singular. It should be 'A large consignment of books is expected.'

97. (1) Special words used in technical discussion may become part of common speech.

98. (3) The writer is a linguist.

99. (2) The passage is primarily concerned with technical terminology.

100. (3) An average man now uses technical vocabulary in his own vocabulary.

❑❑❑

24 SSC – CGL

Combined Graduate Level (Tier-I) Examination
Solved Paper – 28 August, 2016

PART-I
(GENERAL INTELLIGENCE & REASONING)

Directions (1–9): Select the related word/letters/number from the given alternatives.

1. Horse : Hoof : : ?
(1) Man : Foot (2) Dog : Black
(3) Paise : Rupee (4) Pen : Pencil

2. LO : PK : : IR : ?
(1) GT (2) SH
(3) MN (4) FU

3. Night: Morning : : ? : Night
(1) Noon (2) Forenoon
(3) Afternoon (4) Evening

4. QTU : ILM : : BEF : ?
(1) PSZ (2) CFH
(3) WZA (4) UXB

5. 6524 : 6465 : : 9638 : ?
(1) 9825 (2) 9736
(3) 9697 (4) 9579

6. 64 : 144 : : 256 : ?
(1) 16 (2) 32
(3) 400 (4) 336

7. 08 : 28 : : 15 : ?
(1) 63 (2) 65
(3) 126 (4) 124

8. ACEG : ZXVT : : HJLM : ?
(1) QOMK (2) SRPO
(3) RPNL (4) SQON

9. Oxygen : Burn : : Carbondioxide : ?
(1) Isolate (2) Foam
(3) Extinguishes (4) Explode

Directions (10–18): Select the one which is different from the other three responses:

10. (1) Pen (2) Marker
(3) Paper (4) Pencil

11. (1) A B D G (2) C D F I
(3) E F H K (4) G H J K

12. (1) Graph (2) Chart
(3) Model (4) Drawing

13. (1) 73 (2) 53
(3) 87 (4) 67

14. (1) Peak (2) Mountain
(3) Hillock (4) Valley

15. (1) 919 – 949 (2) 646 – 686
(3) 828 – 848 (4) 434 – 464

16. (1) N M L (2) O P Q
(3) X W V (4) H G E

17. (1) E (2) I
(3) O (4) V

18. (1) 24-47 (2) 38-61
(3) 74-98 (4) 54-77

19. Arrange the following words according to English Dictionary.
(A) Gargle (B) Garden
(C) Garbo (D) Garnish
(E) Garland
(1) (B), (C), (D), (A), (E)
(2) (C), (B), (A), (E), (D)
(3) (C), (B), (D), (E), (A)
(4) (D), (C), (B), (A), (E)

Directions (20–21): Which one of the given responses would be a meaningful order of the following words in ascending order?

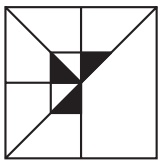
20. (A) Vegetable (B) Market
(C) Cutting (D) Cooking
(E) Food
(1) (A), (B), (D), (C), (E)
(2) (B), (A), (C), (D), (E)
(3) (C), (A), (B), (E), (D)
(4) (E), (B), (A), (C), (D)

21. (A) Honey (B) Flower
(C) Honey Bee (D) Wax
(1) (A), (C), (D), (B)
(2) (B), (A), (D), (C)
(3) (B), (C), (A), (D)
(4) (D), (C), (B), (A)

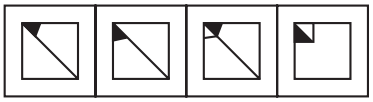
22. Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
—— b b — c — b g __ b __ g
(1) c b g b c (2) c g b c b
(3) c g b c c (4) g b c b b

23. Which answer figure will complete the pattern in the question figure?

Question Figure



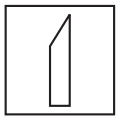
Answer Figures



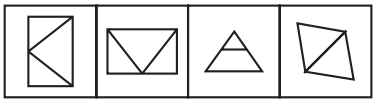
(1) (2) (3) (4)

24. Select the answer figure in which the question figure is hidden/ embedded.

Question Figure



Answer Figures

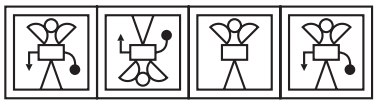


(1) (2) (3) (4)

25. Which of the answer figure is exactly the mirror image of the given figure, when the mirror is held on the line AB?

Question Figure

Answer Figures



(1) (2) (3) (4)

PART-II
(GENERAL AWARENESS)

26. On the tributary of which river has Rihand Dam been constructed?
(1) Chambal (2) Yamuna
(3) Son (4) Periyar

27. AGMARK is
(1) A cooperative for egg production
(2) Regulated agricultural market
(3) Farmers' cooperative
(4) A quality guarantee stamp for commodities

28. The decline of Indian Handicrafts industry in the 19th century was attributed to
(1) Competition from British manufacturing industries only
(2) Disappearance of Indian Princely Courts only
(3) Establishment of alien rule only
(4) All of these

29. The Industrial Revolution in England represented the climax of the transition from
(1) Slavery to feudalism
(2) Feudalism to capitalism
(3) Capitalism to socialism
(4) Socialism to market socialism

30. The International Court of Justice sits in
(1) Geneva (2) The Hague
(3) Vienna (4) Rome

31. What can the President do if a State fails to comply with the Directives of the Central Government?
(1) He can dissolve State Legislature and order fresh elections
(2) He can declare the breakdown of constitutional machinery in the State and assume responsibility for the governance of the State
(3) He can send paramilitary forces to the State to secure compliance
(4) Any of these

32. Why was the Simon Commission boycotted by the Indians?
(1) It did not include any Indian as a member
(2) It did not have any woman member
(3) It was appointed before the stipulated time
(4) It refused to meet prominent Indian leaders

33. Which one of the following appointments is not within the preview of the President of India?
(1) Chief Justice of India
(2) Chairman, Finance Commission
(3) Chief of Army Staff
(4) Speaker of Lok Sabha

34. Who among the following started the first newspaper in India?
(1) Dadabhai Naoroji
(2) W.C. Bannerjee
(3) Rabindranath Tagore
(4) James A. Hickey

35. Who founded the Servants of India Society?
(1) Dadabhai Naoroji
(2) Gopal Krishna Gokhale
(3) B.G. Tilak
(4) Swami Dayanand Saraswati

36. English education was introduced in India by
(1) Lord Curzon
(2) Jawaharlal Nehru
(3) Lord Macaulay
(4) Lord Dalhousie

37. Name the important French possession in India.
(1) Goa (2) Pondicherry
(3) Daman (4) Cochin

38. Who was the first Indian to become member of British Parliament?
(1) W.C. Bannerjee
(2) Behramji M. Malabari
(3) D.N. Wacha
(4) Dadabhai Naoroji

39. The length of India's coastline is about
(1) 4900 kms (2) 5700 kms
(3) 7500 kms (4) 8300 kms

40. Which one of the following is the second highest peak of the world?
(1) Dhaulagiri (2) Kanchenjunga
(3) K2 (4) Nanda Devi

41. Which one of the following coasts of India is most affected by violent tropical cyclones?
(1) Malabar (2) Andhra
(3) Konkan (4) Gujarat

42. The largest freshwater lake in the world is
(1) Lake Victoria
(2) Lake Michigan
(3) Lake Balkhash
(4) Lake Superior

43. In the world, India tops in the production of
(1) Milk (2) Rice
(3) Jute (4) Coffee

44. Which breed of the following buffalo breeds is found in the South-Western part of Gujarat?
(1) Murrah (2) Bhadwari
(3) Surti (4) Toda

45. Which one of the following is the first National Park of India?
(1) Corbett National Park
(2) Bandipur National Park
(3) Kanha National Park
(4) Sariska National Park

46. The colour of the eye depends upon the pigment present in
(1) Cornea (2) Iris
(3) Rods (4) Cones

47. The ability of the eye to see in the dark, is due to the production of a purple pigment known as
(1) Carotene (2) Rhodopsin
(3) Lodopsin (4) Retinene

48. Which of the following animals is dumb?
(1) Deer (2) Giraffe
(3) Stag (4) Yak

49. The sky appears blue because
(1) All colours interfere to produce blue
(2) In white light, the blue component dominates
(3) The atmosphere scatters blue colour more than the others
(4) It is actually blue

50. The device in communication satellites which receives signals from an earth station and transmits them to different directions is
(1) Transformer (2) Transistor
(3) Transponder (4) Transducer

PART-III
(QUANTITATIVE APTITUDE)

51. The single discount, which is equivalent to three successive discounts of 25%, 20% and 10%, is
(1) 55% (2) 54%
(3) 46% (4) 45%

52. The value of an equipment depreciates by 20% each year. How much less will the value of the equipment be after 3 years?
(1) 48.8% (2) 51.2%
(3) 54% (4) 60%

53. What will be the value of $\frac{\sec^4(x+y)-\sec^2(x+y)}{\tan^4 z+\tan^2 z}$ if x, y and z are the angles of an isoscles triangle?
(1) $\sec(x+y)\tan z$
(2) $\sec z \tan(x+y)$
(3) 0
(4) 1

54. ΔABC is an isoscles triangle with AB = AC and $\angle A = x$, if side BA is produced such that AB = AD then what will be the value of $\angle BCD$?
(1) $90° - x$ (2) $90° + x$
(3) $90°$ (4) $2x$

55. If $x - 3 = x^1 + 2\sqrt{2}$, then the value of $x^3 - \frac{1}{x^3}$ will be
(1) $108 + 76\sqrt{2}$ (2) $76 + 108\sqrt{2}$
(3) $106 + 78\sqrt{2}$ (4) $78 + 106\sqrt{2}$

56. If A : B = 3 : 4 and B : C = 6 : 5, then A : (A + C) is equal to
(1) 9 : 10 (2) 10 : 9
(3) 9 : 19 (4) 19 : 9

57. If $\frac{2}{3}$ of A = 75% of B = 0.6 of C, then A : B : C is equal to
(1) 9 : 8 : 10 (2) 8 : 9 : 10
(3) 3 : 4 : 5 (4) 4 : 3 : 5

58. If the sum of two quantities is equal to three times their difference, then the ratio of the two quantities is
(1) 1 : 3 (2) 3 : 1
(3) 2 : 1 (4) 2 : 3

59. The angle of elevation of a cloud from a point 60 m above a lake is 30° and the angle of depression of the reflection of cloud in the lake is 60°. What will be the height of cloud from lake?
(1) 80 m (2) 60 m
(3) 120 m (4) 100 m

60. A sum of money amounts to ₹ 1,352 in 2 years at 4% per annum of compound interest. The sum is
(1) ₹ 1,200 (2) ₹ 1,250
(3) ₹ 1,280 (4) ₹ 1,296

61. In a quadrilateral ABCD, AO and BO are bisectors of $\angle A$ and $\angle B$, $\angle C = 70°$ and $\angle D = 90°$, then $\angle AOB$ will be equal to
(1) 80° (2) 110°
(3) 90° (4) 100°

62. At a certain rate of simple interest, a certain sum of money becomes double of itself in 10 years. It will become treble of itself in
(1) 15 years (2) 18 years
(3) 20 years (4) 30 years

63. A and B together can complete a piece of work in 18 days, B and C in 24 days and A and C in 36 days. In how many days, will all of them together complete the work?
(1) 16 (2) 15
(3) 12 (4) 10

64. Find the area of a triangular piece of land whose sides are 72 m, 30 m and 78 m respectively.
(1) 1080 sq.m. (2) 1050 sq.m.
(3) 1000 sq.m. (4) 1100 sq.m.

65. A can complete $\frac{2}{3}$ of a work in 4 days and B can complete $\frac{3}{5}$ of the work in 6 days. In how many days can both A and B together complete the work?
(1) 3 (2) 2
(3) $3\frac{3}{4}$ (4) $2\frac{7}{8}$

66. There is a square field whose side is 44 m. A square flowerbed is prepared in its centre, leaving a gravel path of uniform width all around the flowerbed. The total cost of laying the flowerbed and gravelling the path of ₹ 2 and ₹ 1 per square metre respectively is ₹ 3536. Find the width of the gravelled path.
(1) 1 metre (2) 1.5 metre
(3) 2 metre (4) 2.5 metre

67. A man goes from Mysore to Bangalore at a uniform speed of 40 km/hr and comes back to Mysore at a uniform speed of 60 km/hr. His average speed for the whole journey is
(1) 48 km/hr (2) 50 km/hr
(3) 54 km/hr (4) 55 km/hr

68. A boat goes 12 km downstream and comes back to the starting point in 3 hours. If the speed of the current is 3 km/hr, then the speed (in km/hr) of the boat in still water is
(1) 12 (2) 9
(3) 8 (4) 6

69. Two trains of lengths 70 m and 80 m are running at speeds of 68 km/hr and 40 km/hr respectively on paralled tracks in opposite directions. In how many seconds will they pass each other?
(1) 10 (2) 8
(3) 5 (4) 3

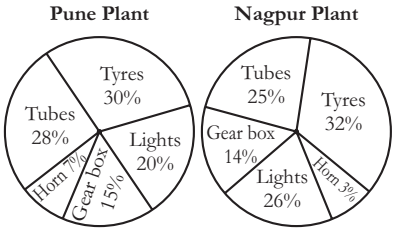
70. A man invests half his capital at the rate of 10% per annum, one-third at 9% and the rest at 12% per annum. The average rate of interest per annum, which the gets, is
(1) 9% (2) 10%
(3) 10.5% (4) 12%

71. OABC is a rhombus whose three vertices A, B and C lie on a circle with centre O. If the radius of the circle is 10 cm find the area of the rhombus.
(1) 50 sq. m. (2) $50\sqrt{3}$ sq. m.
(3) $50\sqrt{2}$ sq. m. (4) $60\sqrt{3}$ sq. m.

72. If $= x + y + z = 1$, $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 1$ and $xyz = -1$, then $x^3 + y^3 + z^3$ will be equal to
(1) –1 (2) +1
(3) –2 (4) +2

Directions (73–75): The pie charts, given here show some automobile parts manufactured by an automobile company at its Pune and Nagpur plants in the year 2009.

Study the pie charts and answer to following question.



73. If the Nagpur plant produced 8,00,000 tyres, then the number of horns produced by it was
(1) 12,000 (2) 18,500
(3) 75,000 (4) 60,000

74. How many percent more tubes were produced at the Pune plant than those produced at the Nagpur plant?
(1) 14 (2) 12
(3) 8 (4) 3

75. The ratio of number of horns produced at Nagpur plant to that produced at Pune plant is
(1) 3 : 7 (2) 10 : 3
(3) 7 : 3 (4) 7 : 10

PART-IV
(ENGLISH LANGUAGE)

Directions (76–80): In the following questions some of the sentences have errors and some have none. Find out which part of the sentence has an error. The number of that part is your answer. If there is no error, the answer is (4).

76. I don't (1)/ want to (2)/ loose it. (3)/ No error. (4)

77. Do not (1)/ get panicked (2)/ in emergencies. (3)/ No error. (4)

78. Sometimes (1)/ I get angry (2)/ on her. (3)/ No error. (4)

79. I use (1)/ to go out (2)/ to work earlier. (3)/ No error. (4)

80. The teacher (1)/ has took (2)/ the responsibility. (3)/ No error. (4)

Directions (81–85): In the following questions sentences are given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four.

81. I have ..... Lakshmi for the past twelve years.
(1) Know (2) Knew
(3) Known (4) Knows

82. He did not qualify ..... the job.
(1) For (2) To
(3) Against (4) With

83. ..... the last ten years we have been victims of abuse.
(1) From (2) For
(3) Before (4) Since

84. The strike has been called ..... .
(1) of (2) at
(3) off (4) up

85. He is always angry ..... his children
(1) with (2) on
(3) over (4) at

Directions (86–90): In the following questions four alternatives are given for the idiom/phrase printed in bold the sentence. Choose the alternative which best expresses the meaning of the idiom/phrase.

86. The angry hockey players **gave vent to their feelings.**
(1) to express (2) to emphasise
(3) to suppress (4) to dismiss

87. I trust you will **bear with** me a few minutes more.
(1) have patience with
(2) support
(3) carry the burden for
(4) be in control for

88. As usual he is **blowing his own trumpet.**
(1) Refusing to use anybody else's trumpet
(2) Playing a tune on the trumpet
(3) Praising himself
(4) Praising himself and others

89. When trade was brisk, he worked hard and made his fortune; he believes in **making hay while the sun shines.**
(1) Taking advantage of a favourable opportunity
(2) Earning money through dishonest means
(3) Earning money at the cost of others
(4) Taking advantage of the inflationary trends

90. When they were surrounded from all sides, the dacoits **laid down their arms.**
(1) Put their arms on the ground
(2) Fought bravely
(3) Surrendered
(4) Became nervous

Directions (91–95): In the following questions a part of the sentence is printed in bold. Below are given alternatives to the bold part at (1), (2) and (3) which may improve the sentence. Choose the correct alternative. In case no improvement is needed your answer is (4).

91. He behaves **like coward.**
(1) Cowardly
(2) In a cowardly manner
(3) As if he was a coward
(4) No improvement

92. **Neither of them went** to the cinema.
(1) Both of them did not go
(2) Both did not go
(3) Neither went
(4) No improvement

93. I **used to have** very thick hair.
(1) Use to have
(2) Used to having
(3) Used to had
(4) No improvement

94. They **reached at Kolkata** on Monday last.
(1) reached to Kolkata
(2) reached on Kolkata

(3) reached Kolkata
(4) No improvement

95. I **did not saw** my cousin in Chennai.
(1) not seen
(2) did not see
(3) did not seen
(4) No improvement

Directions (96–100): Read the passage carefully and choose the best answer to each question out of the four alternatives.

PASSAGE

There are three main groups of oils-animal, vegetable and mineral. Great quantities of animal oil come from whales, those enormous creatures of the sea, which are the largest of the animals remaining in the world. To protect the whales from the cold of the Arctic seas, nature has provided them with a thick covering of fat, called blubber. When the whale is killed, the blubber is stripped off and boiled down. It produces a great quantity of oil which can be made into food for human consumption. A few other creatures yield oil, but none so much as the whale. The livers of the cod and halibut, two kinds of fish, yield nourishing oil. Both cod liver oil and halibut oil are given to sick children and other invalids who need certain vitamins.

Vegetable oils has been known from very old times. No household can get on without it, for it is used in cooking. Perfumes may be made from the oils of certain flowers. Soaps are made from vegetable and animal product and the oils of certain flowers.

96. The main source of animal oil is
(1) Fish (2) Whale
(3) Sea weeds (4) Plants

97. Vegetable oil is mainly used for
(1) Eating
(2) Cooking
(3) Frying
(4) Lubricating

98. The ..... of fish yields nourishing oil.
(1) Liver (2) Stomach
(3) Eyes (4) Head

99. The thick protective covering of fat on a whale is called a
(1) Skin (2) Cells
(3) Blubber (4) Fins

100. ..... are made from vegetable, animal products and the oils of certain flowers.
(1) Perfumes
(2) Cosmetics
(3) Cooking medium
(4) Soaps

Short Answers

1. (1)	**2.** (3)	**3.** (4)	**4.** (3)	**5.** (4)	**6.** (3)	**7.** (2)	**8.** (4)	**9.** (3)	**10.** (3)
11. (4)	**12.** (3)	**13.** (3)	**14.** (4)	**15.** (1)	**16.** (4)	**17.** (4)	**18.** (3)	**19.** (2)	**20.** (2)
21. (3)	**22.** (2)	**23.** (3)	**24.** (2)	**25.** (4)	**26.** (3)	**27.** (4)	**28.** (4)	**29.** (3)	**30.** (2)
31. (2)	**32.** (1)	**33.** (4)	**34.** (3)	**35.** (2)	**36.** (3)	**37.** (2)	**38.** (4)	**39.** (3)	**40.** (3)
41. (2)	**42.** (4)	**43.** (3)	**44.** (3)	**45.** (1)	**46.** (2)	**47.** (4)	**48.** (2)	**49.** (3)	**50.** (3)
51. (3)	**52.** (1)	**53.** (4)	**54.** (3)	**55.** (1)	**56.** (3)	**57.** (1)	**58.** (3)	**59.** (3)	**60.** (2)
61. (1)	**62.** (3)	**63.** (1)	**64.** (1)	**65.** (3)	**66.** (3)	**67.** (1)	**68.** (2)	**69.** (3)	**70.** (2)
71. (2)	**72.** (2)	**73.** (3)	**74.** (2)	**75.** (1)	**76.** (3)	**77.** (2)	**78.** (3)	**79.** (1)	**80.** (2)
81. (3)	**82.** (1)	**83.** (2)	**84.** (3)	**85.** (1)	**86.** (1)	**87.** (1)	**88.** (3)	**89.** (1)	**90.** (3)
91. (3)	**92.** (4)	**93.** (2)	**94.** (3)	**95.** (2)	**96.** (2)	**97.** (2)	**98.** (1)	**99.** (3)	**100.** (4)

Hints & Solutions

Part-I
(General Intelligence & Reasoning)

1. (1) The hoof of horse is analogous to foot of man.

2. (3) L $\xrightarrow{+4}$ P O $\xrightarrow{-4}$ K
Similarly,
I $\xrightarrow{+4}$ M R $\xrightarrow{-4}$ N

3. (4) After night, it comes morning. Similarly, after evening it comes night.

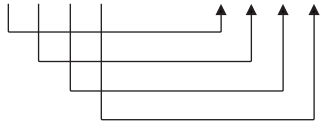
4. (3) Q $\xrightarrow{+3}$ T $\xrightarrow{+1}$ U
I $\xrightarrow{+3}$ L $\xrightarrow{+1}$ M
B $\xrightarrow{+3}$ E $\xrightarrow{+1}$ F
Similarly,
W $\xrightarrow{+3}$ Z $\xrightarrow{+1}$ A

5. (4) 6524 – 6465 = 59
9638 – 59 = 9579

6. (3) $64 = 8 \times 8$
$144 = 12 \times 12$
$256 = 16 \times 16$
$400 = 20 \times 20$

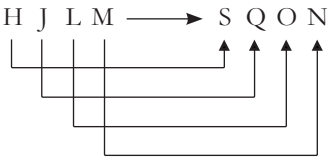
7. (2) $3 \times 3 - 1 = 9 - 1 = 8$
$3 \times 3 \times 3 + 1 = 27 + 1 = 28$
$4 \times 4 - 1 = 16 - 1 = 15$
$4 \times 4 \times 4 + 1 = 64 + 1 = 65$

8. (4) A C E G → Z X V T



Pairs of opposite letters.

Similarly,



9. (3) Oxygen helps in burning. Carbon dioxide extinguishes fire.

10. (3) Except Paper, all others are used for writing on the paper.

11. (4) A $\xrightarrow{+1}$ B $\xrightarrow{+2}$ D $\xrightarrow{+3}$ G
C $\xrightarrow{+1}$ D $\xrightarrow{+2}$ F $\xrightarrow{+3}$ I
E $\xrightarrow{+1}$ F $\xrightarrow{+2}$ H $\xrightarrow{+3}$ K
G $\xrightarrow{+1}$ H $\xrightarrow{+2}$ J $\xrightarrow{+1}$ K

12. (3) Model is different from the other three.

13. (3) Except the number 87, all other numbers are Prime Numbers.

14. (4) Valley is different from Peak, Mountain and Hillock.

Valley is an area of land between hills or mountains often with a river flowing through it.

15. (1) In the number pair 919-949, both the numbers are odd numbers.

16. (4) N $\xrightarrow{-1}$ M $\xrightarrow{-1}$ L
O $\xrightarrow{+1}$ P $\xrightarrow{+1}$ Q
X $\xrightarrow{-1}$ W $\xrightarrow{-1}$ V
H $\xrightarrow{-1}$ G $\xrightarrow{-2}$ E

17. (4) Except V, all others are Vowels.

18. (3) Except in the number pair 74-98, in all others the difference between the two numbers is 23.

47 – 24 = 23
61 – 38 = 23
98 – 74 = 24
77 – 54 = 23

19. (2) Arrangement of words according to the dictionary:

Garbo (C) → Garden (B) → Gargle (A) → Garland (E) → Garnish (D)

20. (2) Meaningful orders of words in ascending order :

Market (B) → Vegetable (A) → Cutting (C) → Cooking (D) → Food (E)

21. (3) Meaningful order of words in ascending order:

Flower (B) → Honey Bee (C) → Honey (A) → Wax (D)

22. (2) $\boxed{c}$ *bb* $\boxed{g}$ */c* $\boxed{b}$ *bg*/ $\boxed{c}$ *b* $\boxed{b}$ *g*

23. (3) Answer figure (3) complete the pattern given in the question figure.

24. (2) Question figure is hidden in the answer figure (2).

25. (4) Answer figure (4) is exactly the mirror image of the given question figure.

PART-II
(GENERAL AWARENESS)

26. (3) Rihand Dam, also known as Govind Ballabh Pant Sagar, is the largest dam of India by volume. The reservoir of Rihand Dam is called Govind Ballabh Pant Sagar and is India's largest artificial lake. Rihand Dam is a concrete gravity dam located at Pipri in Sonbhadra District in Uttar Pradesh, India. Its reservoir area is on the border of Madhya Pradesh and Uttar Pradesh. It is located on the Rihand River, a tributary of the Son River.

27. (4) AGMARK is a certification mark employed on agricultural products in India, assuring that they conform to a set of standards approved by the Directorate of Marketing and Inspection an attached Office of the Department of Agriculture, Cooperation and Farmers Welfare under Ministry of Agriculture & Farmers Welfare an agency of the Government of India. The AGMARK Head Office at Faridabad (Haryana) is legally enforced in India by the Agricultural Produce (Grading and Marking) Act of 1937 (and amended in 1986). The present AGMARK standards cover quality guidelines for 222 different commodities spanning a variety of pulses, cereals, essential oils, vegetable oils, fruits and vegetables and semi-processed products like vermicelli.

28. (4) The Indian handicrafts that had made the country famous, collapsed under the colonial rule. This was mainly due to the competition posed by the machine-made goods that were imported from Britain. The ability of mass production of goods helped Britain to flood the Indian markets with cheap products especially cotton textiles.

29. (3) The Industrial Revolution in England represented the climax of the transition from capitalism to socialism.

30. (2) The International Court of Justice (ICJ) is the principal judicial organ of the United Nations (UN). It was established in June 1945 by the Charter of the United Nations and began work in April 1946. The seat of the Court is at the Peace Palace in The Hague (Netherlands). Of the six principal organs of the United Nations, it is the only one not located in New York (USA).

31. (2) President can declare the breakdown of constitutional machinery in the State and assume responsibility for the governance of the State.

32. (1) Simon Commission boycotted because Indians were outraged at their exclusion from the Commission. The Simon Commission was a group of 7 MPs from Britain who was sent to India in 1928 to study constitutional reforms and make recommendations to the government. The Commission was originally named the Indian Statutory Commission. It came to be known as the Simon Commission after its chairman Sir John Simon. No Indian was appointed in the commission and the promise of appeasing the Indian opinion seemed to be a bubble. When no Indian was included in the commission, it was like depriving of their right to participate in the determination of the constitution of their own country.

33. (4) The Speaker is elected in the very first meeting of the Lok Sabha after the general elections for a term of 5 years from amongst the members of the Lok Sabha.

34. (3) The first newspaper in India was published on 29 January, 1780 by James Augustus Hicky under the British Raj and its name was 'The Bengal Gazette'. It was also called as 'Calcutta General Advertiser' and people simply remember it as 'Hicky's Gazette'.

35. (2) The Servants of India Society was formed in Pune, Maharashtra, on June 12, 1905 by Gopal Krishna Gokhale, who left the Deccan Education Society to form the association.

36. (3) In India Thomas Babington Macaulay is fully credited with the official introduction of English education, though the necessary order on the subject was issued by Bentinck, the Governor-General of India, on 7 March, 1835.

37. (2) The common name for the French possessions in India is French India. It included Pondicherry (now Puducherry), Karikal and Yanaon on the Coromandel Coast, Mahe on the Malabar Coast and Chandernagore in West Bengal. Other than this, there were lodges in Machilipatnam, Kozhikode and Surat.

38. (4) Dadabhai Naoroji (1825-1917), known as the Grand Old Man of India, and an early Indian political and social leader. He was a Liberal Party member of Parliament (MP) in the United Kingdom House of Commons between 1892 and 1895, and the first Indian to be a British MP.

39. (3) India measures 3,214 km from north to south and 2,933 km from east to west. It has a land frontier of 15,200 km and a coastline of 7,516.6 km.

40. (3) K2 also known as Mount Godwin-Austen at 8,611 metres (28,251 ft) above sea level, is the second highest mountain in the world, after Mount Everest at 8,848 metres (29,029 ft).

41. (2) Andhra coast of India is the most affected by violent tropical cyclones.

42. (4) Lake Superior, the largest of the Great Lakes of North America, is also the world's largest freshwater lake by surface area and the third largest freshwater lake by volume. Lake Baikal is the world's largest freshwater lake in terms of volume. It contains about 5,521 cubic miles of water (23,013 cubic kilometers), or approximately 20% of Earth's fresh surface water.

43. (3) In the world, India tops in the production of Jute. Second in the milk & rice, sixth in coffee.

44. (3) Surti (Charotari) Buffalo: It is named after the town of Surat. Breeding Tract is in and around Kheda, Vadodara, Anand & Bharuch districts of the middle and southern part of Gujarat.

45. (1) The first National Park in India was set up in 1935 in the foot hills of the Hiamalayas in Uttar Pradesh and was known as Hailey National Park. It later came to be known as Jim Corbett National Park, now in Uttarakhand state.

46. (2) Eye colours depend on the amount of pigment (melanin) found in the iris and how it is distributed. Light grey-blue eyes contain much less pigment than extremely dark brown eyes.

47. (4) The ability of the eye to see in the dark, is due to the production of a purple pigment known as Retinene.

48. (2) Giraffe is a dumb animal.

49. (3) Blue light is scattered in all directions by the tiny molecules of air in Earth's atmosphere. Blue is scattered more than other colours because it travels as shorter, smaller waves. This is why we see a blue sky most of the time.

50. (3) A wireless communications device usually attached to a satellite. A transponder receives and transmits radio signals at a prescribed frequency range. After receiving the signal, a transponder will at the same time broadcast the signal at a different frequency. The term is a combination of the word's transmitter and responder. Transponders are used in satellite communications and in location, identification and navigation systems.

PART-III (QUANTITATIVE APTITUDE)

51. (3) Equivalent single discount for 25% and 20%

$$= \left(25 + 20 - \frac{25 \times 20}{100}\right)\% = 40\%$$

Equivalent single discount for 40% and 10%

$$= \left(40 + 10 - \frac{40 \times 10}{100}\right)\% = 46\%$$

52. (1) If the present worth of the equipment = ₹ 100,

Then,

Price after 3 years $= 100 \times \left(\frac{80}{100}\right)^3$

$= ₹\ 51.2$

$\therefore$ Depreciation = 48.8%

53. (4) x, y and z are angles of a triangle:

So, $x + y + z = 180°$

Now, $\dfrac{\sec^4(x+y) - \sec^2(x+y)}{\tan^4 z + \tan^2 z}$

$$= \frac{\sec^2(x+y)\left[\sec^2(x+y) - 1\right]}{\tan^2 z\,(\tan^2 z + 1)}$$

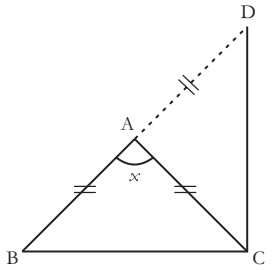
$$= \frac{\sec^2(x+y)\tan^2(x+y)}{\tan^2 z \sec^2 z}$$

$$= \frac{\sec^2(180° - z)\tan^2(180° - z)}{\tan^2 z \sec^2 z}$$

$$= \frac{(-\sec z)^2(\tan z)^2}{\tan^2 z \sec^2 z} = 1$$

54. (3) In ΔABC,

$AB = AC$



$\Rightarrow \quad \angle ABC = \angle ACB$ ... (i)

Now from question,

$AB = AD$

$\Rightarrow \quad AC = AD$

($\because$ AB = AC)

In ΔADC,

$AC = AD$

$\Rightarrow \quad \angle ADC = \angle ACD$ ... (ii)

Adding equation (i) and (ii),

$\angle ABC + \angle ADC = \angle ACB + \angle ACD$

$\Rightarrow \angle DBC + \angle BDC = \angle BCD$ ... (iii)

but, in ΔBCD,

$\angle DBC + \angle BDC = 180° - \angle BCD$ ... (iv)

Hence from (iii) and (iv),

$\angle BCD = 180° - \angle BCD$

$\Rightarrow \quad 2\angle BCD = 180°$

$\Rightarrow \quad \angle BCD = \dfrac{180°}{2} = 90°$

55. (1) $x - 3 = x^{-1} + 2\sqrt{2}$

$\Rightarrow \quad x - \dfrac{1}{x} = 3 + 2\sqrt{2}$ ... (i)

$x^3 - \dfrac{1}{x^3}$

$= \left(x - \dfrac{1}{x}\right)\left(x^2 + \dfrac{1}{x^2} + x \times \dfrac{1}{x}\right)$

$= \left(x - \dfrac{1}{x}\right)\left[\left(x - \dfrac{1}{x}\right)^2 + 2 + 1\right]$

$= (3 + 2\sqrt{2})\,[3 + 2\sqrt{2})^2 + 3]$

$= 3 + 2\sqrt{2})\,[9 + 8 + 12\sqrt{2} + 3]$

$= (3 + 2\sqrt{2})(20 + 12\sqrt{2})$

$= 60 + 40\sqrt{2} + 36\sqrt{2} + 48$

$= 108 + 76\sqrt{2}$

56. (3) $\frac{A}{B} \times \frac{B}{C} = \frac{3}{4} \times \frac{6}{5}$

$\Rightarrow \frac{A}{C} = \frac{9}{10} \Rightarrow \frac{C}{A} = \frac{10}{9}$

$\Rightarrow \frac{C}{A} + 1 = \frac{10}{9} + 1$

$= \frac{C + A}{A} = \frac{10 + 9}{9}$

$= \frac{19}{9}$

$\Rightarrow A : (A + C) = 9 : 19$

57. (1) $\frac{A \times 2}{3} = \frac{B \times 75}{100} = \frac{C \times 6}{10}$

$\Rightarrow \frac{2A}{3} = \frac{3B}{4} = \frac{3C}{5}$

Dividing by 6 (l cm of 2, 3 and 3)

$\Rightarrow \frac{A}{9} = \frac{B}{8} = \frac{C}{10}$

$\therefore A : B : C = 9 : 8 : 10$

58. (3) $x + y = 3(x - y)$

$\Rightarrow x + y = 3x - 3y$

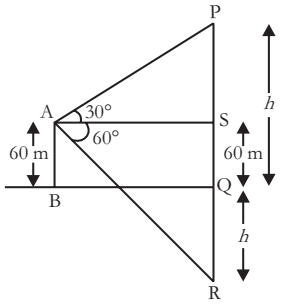
$\Rightarrow 2x = 4y$

$\Rightarrow \frac{x}{y} = \frac{2}{1}$

$\therefore x : y = 2 : 1$

59. (3) Let P is cloud and R is its image in lake and it is seen from point A which is above 60 metre from water level B.

Then let, the height of cloud = h metre



In $\Delta APS, \frac{PS}{AS} = \tan 30°$

$AS = \frac{PS}{\tan 30°} = \frac{h - 60}{\frac{1}{\sqrt{3}}}$

$= \sqrt{3}(h - 60)$ .. (i)

In $\Delta RAS, \frac{RS}{AS} = \tan 60° = \sqrt{3}$

$AS = \frac{RS}{\sqrt{3}} = \frac{h + 60}{\sqrt{3}}$ .. (ii)

From equation (i) and (ii),

$\sqrt{3}(h - 60) = \frac{h + 60}{\sqrt{3}}$

or, $3(h - 60) = h + 60$

or, $2h = 60 + 180$

$\therefore h = \frac{240}{2} = 120$ metres

60. (2) If the principal = ₹ x, then

$A = P\left(1 + \frac{R}{100}\right)^T$

or, $1352 = x\left(1 + \frac{4}{100}\right)^2$

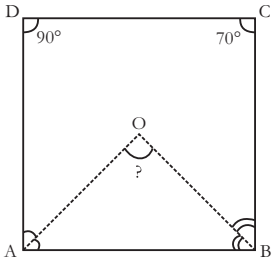
or, $1352 = x\left(\frac{26}{25}\right)^2$

$\therefore x = \frac{1352 \times 25 \times 25}{26 \times 26}$

= ₹ 1250

61. (1) In ΔOAB,

$\angle AOB = 180° - (\angle OAB + \angle OBA)$



$\Rightarrow \angle AOB = 180° - (\frac{1}{2}\angle BAD + \frac{1}{2}\angle ABC)$

($\because$ OA and OB are bisector of $\angle A$ and $\angle B$)

$\Rightarrow \angle AOB = 180° - \frac{1}{2}[\angle A + \angle B]$

$= 180° - \frac{1}{2}[360° - (\angle C + \angle D)$

$= \frac{1}{2}(\angle C + \angle D) = \frac{1}{2}(70° + 90°)$

$= \frac{1}{2} \times 160° = 80°$

62. (3) Principal = ₹ x and rate = r% p.a. then

$\text{Rate} = \frac{SI \times 100}{\text{Principal} \times \text{Time}}$

$= \frac{x \times 100}{x \times 10} = 10\%$

Case II

$\therefore \text{Time} = \frac{SI \times 100}{\text{Principal} \times \text{Rate}}$

$= \frac{2x \times 100}{x \times 10}$

= 20 years

63. (1) (A + B)'s 1 day's work = $\frac{1}{18}$

(B + C)'s 1 day's work = $\frac{1}{24}$

(A + C)'s 1 day's work = $\frac{1}{36}$

Adding all three,

2 (A + B + C)'s 1 day's work

$= \frac{1}{18} + \frac{1}{24} + \frac{1}{36} = \frac{4 + 3 + 2}{72}$

$= \frac{1}{8}$

$\therefore$ (A + B + C)' 1 day's work = $\frac{1}{16}$

$\therefore$ A, B and C together will complete the work = 16 days

64. (1) Area of triangle

$= \sqrt{s(s - a)(s - b)(s - c)}$

where a, b, c are sides of the triangular field and

$s = \frac{a + b + c}{2}$

Here, s

$= \frac{72 + 30 + 78}{2}$

$= \frac{180}{2} = 90$ metres

$\therefore \text{Area} = \sqrt{90(90 - 72)(90 - 30)(90 - 78)}$

$= \sqrt{90 \times 18 \times 60 \times 12}$

$= \sqrt{5 \times 18 \times 18 \times 5 \times 12 \times 12}$

$= 5 \times 18 \times 12 = 1080$ sq. metres

65. (3) Time taken by A to complete the work = $\frac{4 \times 3}{2} = 6$ days

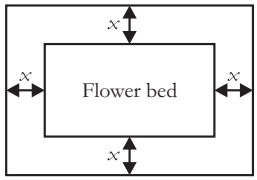
Time taken by B to complete the work = $\frac{6 \times 5}{3} = 10$ days

$\therefore$ (A + B)'s 1 day's work

$= \frac{1}{6} + \frac{1}{10} = \frac{5 + 3}{30} = \frac{8}{30} = \frac{4}{15}$

$\therefore$ A and B together will complete the work in $\frac{15}{4} = 3\frac{3}{4}$ days.

66. (3) Width of the gravel path = x metres



Then, each side of the square flower bed = $(44 - 2x)$m

$\therefore$ Its area = $(44 - 2x)^2$ sq. metres

Now, Area of square field

$= 44 \times 44$ sq. metres

$\therefore$ Area of the gravel path

= Area of the field – Area of the flower bed

$= [(44)^2 - (44 - 2x)^2]$ sq. metres

$= (44 + 44 - 2x)(44 - 44 + 2x)$ sq. metres

$= (88 - 2x)(2x)$ sq. metres

$= (176x - 4x^2)$ sq. metres

Cost of laying the flower bed

$= ₹ (44 - 2x)^2 \times 2$

Cost of gravelling the path

$= ₹ (176x - 4x^2) \times 1$

$\therefore 2 \times (44 - 2x)^2 + (176x - 4x^2) \times 1 = 3536$

$\Rightarrow 3872 - 352x + 8x^2 + 176x - 4x^2 = 3536$

$\Rightarrow 4x^2 - 176x + 336 = 0$

$\Rightarrow x^2 - 44x + 84 = 0$

$\Rightarrow x^2 - 42x - 2x + 84 = 0$

$\Rightarrow x(x - 42) - 2(x - 42) = 0$

$\Rightarrow (x - 42)(x - 2) = 0$

$\Rightarrow x = 42$ or 2

But $x \neq 42$ because the side of the square = 44 metres

Hence, the width of the gravelled path = 2 metres

67. (1) Average speed $= \left(\frac{2xy}{x+y}\right)$kmph

$= \left(\frac{2 \times 40 \times 60}{40 + 60}\right)$kmph = 48 kmph

68. (2) If the speed of boat in still water = x kmph, then

$$\frac{12}{x+3} + \frac{12}{x-3} = 3$$

$$\Rightarrow 12\left(\frac{x-3+x+3}{(x+3)(x-3)}\right) = 3$$

$$\Rightarrow 4 \times 2x = x^2 - 9$$

$$\Rightarrow x^2 - 8x - 9 = 0$$

$\Rightarrow x^2 - 9x + x - 9 = 0$

$\Rightarrow x(x - 9) + 1(x - 9) = 0$

$\Rightarrow (x - 9)(x + 1) = 0$

$\Rightarrow x = 9$ because $x \neq -1$

69. (3) Relative speed = (68 + 40) kmph

= 108 kmph

$= \left(\frac{108 \times 5}{18}\right)$ m/sec = 30 m/sec

$\therefore$ Required time

$= \frac{\text{Sum of the lengths of both trains}}{\text{Relative speed}}$

$= \left(\frac{70 + 80}{30}\right)$ second = 5 second

70. (2) Principal = ₹ x

$\therefore I_1 = \frac{x \times 10 \times 1}{2 \times 100} = ₹ \frac{x}{20}$

$I_2 = \frac{x \times 9 \times 1}{3 \times 100} = ₹ \frac{3x}{20}$

$I_3 = \frac{x}{6} \times \frac{12 \times 1}{100} = ₹ \frac{x}{50}$

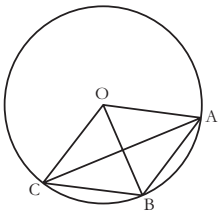
$\therefore I_1 + I_2 + I_3$

$= ₹ \left(\frac{x}{20} + \frac{3x}{100} + \frac{x}{50}\right)$

$= ₹ \left(\frac{5x + 3x + 2x}{100}\right) = ₹ \frac{x}{10}$

$\therefore$ Average annual rate = 10%

71. (2)



Since OABC is a rhombus

Therefore, AB = BC = OA = OC = 10 cm

In triangle OBC,

OC = OB (radii of circle)

$\therefore$ OC = OB = BC = 10 cm

$\therefore$ ΔOBC is an equilateral triangle

$\therefore$ Area of rhombus OABC

$= 2 \times$ Area of ΔOBC

$= 2 \times \frac{\sqrt{3}}{4} \times 10 \times 10$

$= 50\sqrt{3}$ sq. metres

72. (2) From formula,

$x^3 + y^3 + z^3 - 3xyz$

$= (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$

$= x^3 + y^3 + z^3 - 3xyz = (x + y + z)[(x + y + z)^2 - 2(xy + yz + zx) - xy - yz - zx]$

$\Rightarrow x^3 + y^3 + z^3 = (x + y + z)[(x + y + z)^2 - 3(xy + yz + zx)] + 3xyz$ ... (i)

Now from equation,

$x + y + z = 1$ ... (ii)

and $xyz = -1$ ... (iii)

and $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 1$

$\Rightarrow \frac{yz + zx + xy}{xyz} = 1$

$\Rightarrow xy + yz + zx = xyz = -1$ ... (iv)

Now putting values from equation (ii), (iii) and (iv) in equation (i),

$x^3 + y^3 + z^3 = 1[1^2 - 3 \times (-1)] + 3 \times (-1) = 1[1 + 3] - 3 = 4 - 3 = 1$

73. (3) $\because$ 32% = 800000

$\therefore 3\% = \frac{800000}{32} \times 3 = 75000$

74. (2) Required percentage

$= \frac{3}{25} \times 100 = 12$

75. (1) Required ratio = 3 : 7

PART-IV (ENGLISH LANGUAGE)

76. (3) Replace **loose it** by **lose it**, the word **Loose (Verb)** means: loosen; to release something.

The word **lose (Verb)** means: to be unable to find something/somebody; mislay.

77. (2) Here, get panicky (Adjective) should be used.

78. (3) Here, angry will be followed by 'with'. Hence, **with her** should be used.

79. (1) Here, **I used to** should be used.

Sentence → I used to go there every Sunday.

80. (2) Here, has taken (V_3) should be used.

Structure of a sentence in Present Perfect is:

Subject + have/has + V_3 (Past Participle)

81. (3) I have **known** Lakshmi for the past twelve years.

82. (1) He did not qualify **for** the job.

83. (2) **For** the last ten years we have been victims of abuse.

84. (3) Phrase **call off** means: to cancel something.

85. (1) He is always angry **with** his children.

86. (1) Idiom **give (full) vent to something** means: to express a feeling especially anger, strongly.

87. (1) Phrase **bear with** means: to be patient with somebody/something.

88. (3) Idiom **blow your own trumpet** means: boast; to praise your own abilities and achievements.

89. (1) Idiom **make hay while the sun shines** means: to make good use of opportunities, good conditions.

90. (3) Idiom **lay down your arms** means: to stop fighting; surrender.

91. (3) 'As if he was a coward' in place of 'like coward'.

92. (4) No improvement required.

93. (2) 'Having' in place of 'have'.

94. (3) Delete 'at' before Kolkata.

95. (2) 'See' in place of 'saw'.

96. (2) Main source of animal oil is whale.

97. (2) Vegetable oil is mainly used for cooking.

98. (1) The **liver** of fish yields nourishing oil.

99. (3) Blubber – thick protective covering of fat on a whale.

100. (4) **Soaps** are made from vegetable, animal products and the oils of certain flowers.

❑❑❑

25

SSC – CGL

Combined Graduate Level (Tier-I) Examination

Solved Paper – 27 August, 2016 (I)

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. Select the related word from the given alternatives

College : Student : : Hospital : ?

(1) Doctor (2) Treatment
(3) Nurse (4) Patient

2. Select the related letters from the given alternatives

DHL : PTX : : BFJ : ?

(1) NRV (2) RVZ
(3) CGK (4) KOS

3. Select the related number from the given alternatives

5 : 124 : : 7 : ?

(1) 125 (2) 248
(3) 342 (4) 343

4. Find the odd word pair from the given alternatives

(1) Hard : Soft
(2) Hot : Cold
(3) Right : Wrong
(4) Come : Arrive

5. Find the odd letters from the given alternatives.

(1) AG (2) WA
(3) ET (4) IQ

6. Find the odd number pair from the given alternatives.

(1) 14, 12 (2) 24, 7
(3) 42, 4 (4) 37, 4

7. Arrange the following words as per the order in the dictionary.

1. RESIGN
2. REPAIR
3. RESIDUE
4. RESEARCH
5. RESCUE

(1) 4 5 3 1 2 (2) 2 5 4 3 1
(3) 2 5 4 1 3 (4) 5 4 3 1 2

8. A series is given with one term missing, choose the correct alternative from the given ones that will complete the series

JAZ, LEX, NIV, PMT, ?

(1) QUR (2) RQR
(3) SUR (4) RUS

9. A series is given with one term missing, choose the correct alternative from the given ones that will complete the series.

19, 28, 39, 52, ?, 84

(1) 39 (2) 52
(3) 67 (4) 84

10. X and Y are brothers. R is the father of Y. T is the sister of S who is maternal uncle of X. How is T related to R?

(1) Mother (2) Wife
(3) Sister (4) Brother

11. A is taller than B. C is taller than A. D is taller than E but shorter than B. Who is the tallest?

(1) C (2) A
(3) D (4) B

12. From the given alternative words, select the word which can be formed using the letters of the given word.

SOMNAMBULISM

(1) NAMES (2) BASALT
(3) SOUL (4) BIOME

13. If D = 4, DOG = 26, then find the value of ANIMAL = ?

(1) 47 (2) 49
(3) 48 (4) 50

14. If '+' stands for '÷', '–' stands for '=', '×' stands for '+', '÷' stands for greater than, '=' stands for less than, '>' stands for multiplication and '<' stands for subtraction, then which of the following alternatives is correct?

(1) $5 \div 2 \times 1 = 3 + 4 > 1$
(2) $5 > 2 \times 1 - 3 > 4 < 1$
(3) $5 \times 2 < 1 - 3 < 4 \times 1$
(4) $5 < 2 \times 1 \div 3 > 4 \times 1$

15. In this question, some equations are solved on the basis of a certain system. On the same basis find out the correct answer from amongst the four alternatives for the unsolved equation.

$3 \times 4 \times 5 = 435$
$4 \times 3 \times 2 = 342$
$2 \times 3 \times 4 = ?$

(1) 324 (2) 342
(3) 432 (4) 243

16. In this question, select the missing number from the given alternatives.

6	15	20
8	4	5
3	5	20
51	65	?

(1) 56 (2) 120
(3) 151 (4) 154

17. Ram walks 3 km towards East and takes a left turn and walks for one km before he turns left and walks 2 km to take another left turn to walk for another one km. How many km is he away from his starting point?

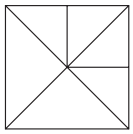
(1) 1 km. (2) 2 kms.
(3) 3 kms. (4) 4 kms.

18. Consider the given statement/(s) to be true and decide which of the given conclusions/assumptions can definitely be drawn from the given statement.

Statements:
All fruits are leaves.
Some fruits are grapes.

Conclusions:
I. Some leaves are grapes.
II. All grapes are fruits.
(1) Only Conclusion I follows
(2) Only Conclusion II follows
(3) Both Conclusions I and II follow
(4) Neither Conclusion I nor II follows

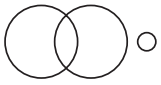
19. Find out the number of triangles in the figure given:



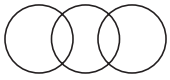
(1) 6 (2) 8
(3) 10 (4) 12

20. Which one of the following diagrams represents the correct relationship between DOCTORS, SURGEONS and NURSES?

(1) 

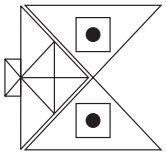
(2) 

(3) 

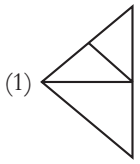
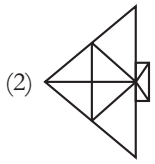
(4) 

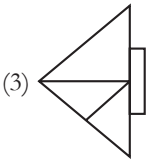
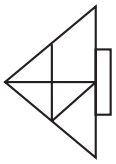
21. Which answer figure will complete the pattern in the question figure?

Question Figure



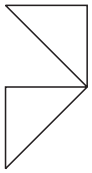
Answer Figures

(1)  (2) 

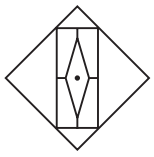
(3)  (4) 

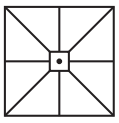
22. From the given answer figures, select the one in which the question figure is hidden/embedded?

Question Figure

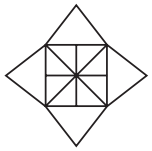


Answer Figures

(1) 

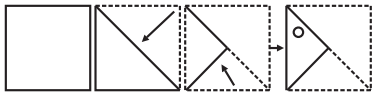
(2) 

(3) 

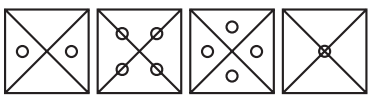
(4) 

23. A piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

Question Figures



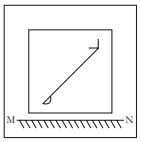
Answer Figures



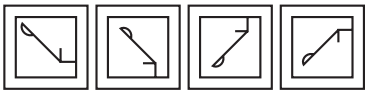
(1) (2) (3) (4)

24. If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

Question Figure



Answer Figures



(1) (2) (3) (4)

25. In this question, a word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column. e.g. 'A' can be represented by 22, 10, etc. and 'P' can be represented by 55, 67, 79, etc. Similarly, you have to identify the set for the word.

"NEAT"

Matrix-I

	0	1	2	3	4
0	L	N	E	A	C
1	A	C	L	N	E
2	N	E	A	C	L
3	C	L	N	E	A
4	E	A	C	L	N

Matrix-II

	5	6	7	8	9
5	P	T	O	R	S
6	R	S	P	T	O
7	T	O	R	S	P
8	S	P	T	O	R
9	O	R	S	P	T

(1) 44, 14, 34, 56
(2) 20, 33, 78, 75,
(3) 13, 40, 67, 99
(4) 32, 21, 41, 68

PART-II
(GENERAL AWARENESS)

26. Which one of the following is not scheme project of the present Government?
(1) AMRUT
(2) Swachh Bharat
(3) AYUSH
(4) Jan Dhan Yojana

27. Which of the following was India's first interplanetary mission?
(1) Chandrayaan Mission
(2) Mangalyaan Mission
(3) Aryabhatta Mission
(4) Philae Mission

28. Why the Earth is having its own atmosphere?
(1) Winds
(2) Clouds
(3) Gravity
(4) Rotation of the Earth

29. Motor skills are associated with which part of the brain?
(1) Frontal Lobe
(2) Parietal Lobe
(3) Temporal Lobe
(4) Occipital Lobe

30. Which enzyme is present in all members of the animal kingdom except Protozoa?
(1) Insulin (2) Pepsin
(3) Renin (4) Amylase

31. At boiling point of liquids, its
(1) Temperature increases
(2) Atmospheric pressure increases
(3) Temperature remains constant
(4) Vapour pressure decreases

32. A level of atmosphere which is composed partly of electrons and positive ions is called
(1) Troposphere (2) Ionosphere
(3) Stratosphere (4) Mesosphere

33. In India which of the following taxes is levied by the State Governments?
(1) Excise duty on liquor
(2) Capital gains tax
(3) Customs tax
(4) Corporation tax

34. After question hour, a motion moved by a Member of Parliament to draw the attention of Executive for discussing a definite matter of public importance is
(1) Privilege motion
(2) Calling attention motion
(3) Adjournment motion
(4) No-confidence motion

35. The major objective of monetary policy is to
(1) Increase government's tax revenue
(2) Revamp the Public Distribution System
(3) Promote economic growth with price stability
(4) Weed out corruption in the economy

36. The only Viceroy to be assassinated in India was
(1) Lord Harding
(2) Lord Northbrook
(3) Lord Ellenborough
(4) Lord Mayo

37. Which one is not the main objective of fiscal policy in India?
(1) To increase liquidity in the economy
(2) To promote price stability
(3) To minimize the inequalities of income & wealth
(4) To promote employment opportunity

38. Who was the founder of the Theosophical Society?
(1) Justice Ranade
(2) Madam Blavatsky
(3) Annie Besant
(4) Bal Gangadhar Tilak

39. India recently signed land boundary agreement with which country?
(1) China (2) Nepal
(3) Bhutan (4) Bangladesh

40. Who among the following Indians is one who has been selected on 27 July, for the Ramon Magsaysay Award, 2016?
(1) Bezwada Wilson
(2) Kailash Satyarthi
(3) Kiran Bedi
(4) Mahasweta Devi

41. The first Field Marshall of India was
(1) A.S. Vaidya
(2) K.M. Cariappa
(3) Sunderji
(4) S.H.F.J. Manekshaw

42. "Earth provides enough to satisfy everyman's need but not everyman's greed". Who said this?
(1) Guru Nanak Dev
(2) Mahatma Gandhi
(3) Pope Paul VI
(4) Indira Gandhi

43. Who won the first medal for India at the Rio Olympics?
(1) Babita Kumari
(2) Narsingh Yadav
(3) P.V. Sindhu
(4) Sakshi Malik

44. The most serious air pollutant causing health hazard is
(1) Sulphur dioxide
(2) Carbon monoxide
(3) Ozone
(4) Nitrogen oxide

45. Helium is added to the oxygen supply of deep sea divers because it is
(1) Less poisonous than nitrogen
(2) Lighter than nitrogen
(3) Readily miscible with oxygen
(4) Less soluble in blood than nitrogen at high pressure

46. Terylene is a condensation polymer of ethylene glycol and which acid?
(1) Benzoic Acid
(2) Salicylic Acid
(3) Phthalic Acid
(4) Terephthalic Acid

47. In IT, means that the data available in the database is both accurate and consistent.
(1) Data Security
(2) Data Availability
(3) Data Binding
(4) Data Integrity

48. On a clean glass plate a drop of water spreads to form a thin layer

whereas a drop of mercury remains almost spherical because
(1) Mercury is a metal
(2) Density of mercury is greater than that of water
(3) Cohesion of mercury is greater than its adhesion with glass
(4) Cohesion of water is greater than its adhesion with glass

49. The smallest island country in the Indian Ocean is
(1) Maldives (2) Sri Lanka
(3) Mauritius (4) Madagascar

50. The Chairman of the Public Accounts Committee of the Parliament is appointed by the
(1) President of India
(2) Prime Minister of India
(3) Speaker of Lok Sabha
(4) Chairman of Rajya Sabha

PART-III (QUANTITATIVE APTITUDE)

51. A and B together can do a piece of work in 6 days and A alone can do it in 9 days. The number of days B will take to do it alone is
(1) 18 days (2) 24 days
(3) 9 days (4) 12 days

52. The length of the two parallel sides of a trapezium are 16 m and 20 m respectively. If its height of 10 m, its area in square meter is
(1) 360 (2) 260
(3) 240 (4) 180

53. A discount series of 15%, 20% and 25% is equal to the single discount of
(1) 48% (2) 49%
(3) 50% (4) 51%

54. ₹ 490 is divided among A, B and C such that A's share is half that of B's and thrice that of C's. What is C's share?
(1) ₹ 49 (2) ₹ 147
(3) ₹ 294 (4) ₹ 245

55. A dealer sold an article at 6% loss. Had he sold it for ₹ 64 more, he would have made a profit of 10%. Then the cost of the article is
(1) ₹ 400 (2) ₹ 200
(3) ₹ 164 (4) ₹ 464

56. There are 1400 students in a school, 25% of them wear spectacles and $\frac{2}{7}$ of them wearing spectacles are boys. How many girls in the school do wear spectacles?
(1) 250 (2) 100
(3) 200 (4) 300

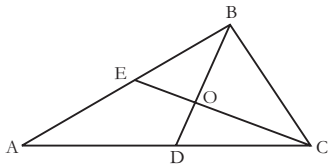
57. A man can row upstream at 12 km/hr and downstream at 18 km/hr. The man's rowing speed in still water is
(1) 15 km/hr (2) 5 km/hr
(3) 3 km/hr (4) 10 km/hr

58. If $ab = 21$ and $\frac{(a+b)^2}{(a-b)^2} = \frac{25}{4}$, then the value of $a^2 + b^2 + 3ab$ is
(1) 115 (2) 121
(3) 125 (4) 127

59. The value of $(d^{s+t} \div d^s) \div d^t$ would be
(1) $d^{2(s+t)}$ (2) 1
(3) 0 (4) d^{s-t}

60. Possible measures of three angles of a triangle are
(1) 33°, 42°, 115°
(2) 40°, 70°, 80°
(3) 30°, 60°, 100°
(4) 50°, 60°, 70°

61. BD and CE are two medians of the triangle ABC. If EO = 7 cm, then the length of CE is



(1) 28 cm (2) 14 cm
(3) 21 cm (4) 35 cm

62. If $\sec^2\theta + \tan^2\theta = \sqrt{3}$, then the value of $(\sec^4\theta - \tan^4\theta)$ is
(1) $\frac{1}{\sqrt{3}}$ (2) 1
(3) $\sqrt{3}$ (4) 0

63. The greatest perfect square number of 6 digits is
(1) 999001 (2) 998001
(3) 998009 (4) 998101

64. The average height of 30 boys out of a class of 50 is 160 cm. If the average height of the remaining boys is 165 cm, the average height of the whole class (in cm) is:
(1) 161 (2) 162
(3) 163 (4) 164

65. Given $(a-b) = 2$, $(a^3 - b^3) = 26$ then $(a+b)^2$ is
(1) 9 (2) 4
(3) 16 (4) 12

66. If $x + y + z = 9$ then the value of $(x-4)^3 + (y-2)^3 + (z-3)^3 - 3(x-4)(y-2)(z-3)$ is
(1) 6 (2) 9
(3) 0 (4) 1

67. Three medians AD, BE and CF of ΔABC intersect at G. The area of ΔABC is 36 sq. cm. Then the area of ΔCGE is
(1) 12 sq. cm. (2) 6 sq. cm.
(3) 9 sq. cm. (4) 18 sq. cm.

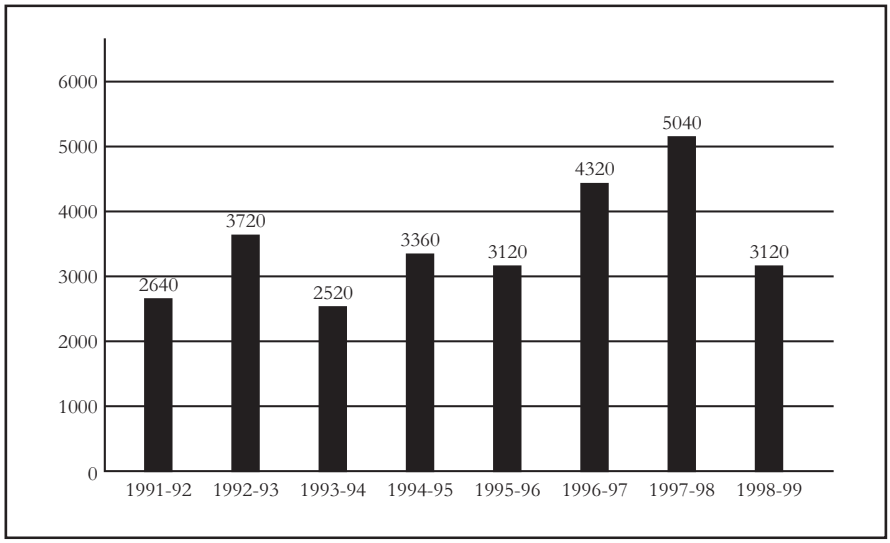
68. A chord of a circle is equal to its radius. A tangent is drawn to the circle at an extremity of the chord. The angle between the tangent and the chord is
(1) 30° (2) 45°
(3) 60° (4) 75°

69. If $\pi \sin\theta = 1$, $\pi \cos\theta = 1$, then the value of $\left\{\sqrt{3}\tan\left(\frac{2}{3}\theta\right) + 1\right\}$ is
(1) 1 (2) $\sqrt{3}$
(3) 2 (4) $\frac{1}{\sqrt{3}}$

70. The difference between simple and compound interest (compounded annually) on a sum of money for 3 years at 10% per annum is ₹ 93. The sum (in ₹) is:
(1) 30000 (2) 30300
(3) 3000 (4) 3030

71. The angles of elevation of top and bottom of a flag kept on a flagpost from 30 metres distance, are 45° and 30° respectively. Height of the flat is [taking $\sqrt{3} = 1.732$]
(1) $12\sqrt{3}$ metre (2) 15 metre
(3) 14.32 metre (4) 12.68 metre

Directions (72–75): Study the following bar-diagram carefully and answer the questions. The bar graph given below shows the foreign exchange reserves of a country (in million US $) from 1991–1992 to 1998–1999.



72. The ratio of the number of years, in which the foreign exchange reserves are above the average reserves, to those in which the reserves are below the average reserves is

(1) 2 : 6 (2) 3 : 4
(3) 3 : 5 (4) 4 : 4

73. The foreign exchange reserves in 1996–97 were **approximately** what per cent of the average foreign exchange reserves over the period under review?

(1) 95% (2) 110%
(3) 115% (4) 124%

74. The percentage increase in the foreign exchange reserves in 1997–98 over 1993–94 is

(1) 100 (2) 150
(3) 200 (4) 120

75. Ratio of the sum of foreign exchange reserves during the years 1991–92, 1992–93, 1993–94 to that during the years 1995–96, 1996–97, 1997–98 is

(1) 31 : 35 (2) 35 : 31
(3) 37 : 52 (4) 52 : 37

PART-IV
(ENGLISH LANGUAGE)

76. In the following question, out of the four alternatives, choose the word which best expresses the meaning of the given word.

PANACEA

(1) Praise (2) Cure-all
(3) Poison (4) Ambrosia

77. In the following question, out of the four alternatives, choose the word which is opposite in meaning to the given word.

DETEST

(1) Denounce (2) Ignore
(3) Adore (4) Castigate

78. Four words are given, out of which only one word is spelt correctly. Choose the correctly spelt word.

(1) Debilitate (2) Impecable
(3) Inkulcate (4) Harrass

Directions (79–81): The sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative.

79. What a ..... holiday!

(1) Momentous (2) Memorable
(3) Momentary (4) Immortal

80. Many important projects have reached the final stage of .....

(1) Accomplishment
(2) Initiation
(3) Resolution
(4) Implementation

81. ..... you live long!

(1) Might (2) May
(3) Shall (4) Should

Directions (82–84): In the following questions, some parts of the sentences have errors and some are correct. Find out which part of a sentence has an error. The number of that part is your answer. If a sentence is free from errors, your answer is No error.

82. Each of the girls (1)/ have come (2)/ with her books. (3)/ No Error (4)

83. Me and my wife (1)/ were at home (2)/ last night. (3)/ No Error (4)

84. Essay writing is an art (1)/ that requires many planning (2)/ on the part of the writer. (3)/ No Error (4)

Directions (85–87): In these questions, four alternatives are given for the idiom/phrase printed in **bold**. Choose the alternative which best expresses the meaning of the idiom/phrase given in **bold**.

85. Caught red-handed

(1) Caught by mistake
(2) Caught with a red-handkerchief
(3) Found wounded
(4) Discovered in the act of doing

86. Gate crasher

(1) Invader
(2) Thief
(3) Uninvited guest
(4) Children

87. To angle

(1) To measure the river breadth
(2) To fish with a net
(3) To fish
(4) To sit and watch the river

Directions (88–90): In each of the following questions, out of the four alternatives, choose the one which can be substituted for the given words/sentence.

88. Favouritism shown by a person in power to his relatives.
(1) Formalism (2) Red-tapism
(3) Nepotism (4) Bureaucracy

89. A round-about way of expression
(1) Verbosity
(2) Talkativeness
(3) Circumlocution
(4) Locquacious

90. Suitable or intended for only young persons
(1) Youthful (2) Puerile
(3) Adolescent (4) Juvenile

Directions (91–95): In each of the following questions, a sentence/part of the sentence is printed in **bold**. Four alternatives are given to the **bold** part which will improve the sentence. Choose the correct alternative. In case no improvement is needed, select option corresponding to "No improvement".

91. Each self is unique, and therefore **cannot be compared**.
(1) Incomparable
(2) Non comparable
(3) Incomparably
(4) No Improvement

92. Shall I sit **between** you at the concert?
(1) Beside
(2) Besides
(3) Next
(4) No Improvement

93. **No one other** reason than poverty is hampering India's progress.
(1) No other
(2) None other
(3) No another
(4) No Improvement

94. The custom has **took root** in the society.
(1) Taken root
(2) Take root
(3) Takes root
(4) No Improvement

95. We will **take care of** your children when you are away at Mumbai.
(1) Be looking for
(2) Look after
(3) Take care after
(4) No Improvement

Directions (96–100): A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives.

My brother, David, was always close to our grandmother. Both of them shared a love of Mother Nature and of food that they had grown themselves. Whenever his schedule permitted, he would drop in for a short visit and a cup of coffee. One day, when he found no one home, he left a chunk of dirt on her porch. This started what was later to be known as his "calling card". Grandmother would come home occasionally and instantly know that Dave had been by when she spotted the chunk of dirt on her porch.

Although Grandmother had a poor upbringing in Italy, she managed to do well in the United States. She was always healthy and independent and enjoyed a fulfilling life. Recently she had a stroke and died. Everyone was saddened by her death. David was disconsolate. His life-long friend was now gone.

96. What is the opposite of the word 'disconsolate'.
(1) Devastated (2) Hilarious
(3) Exuberant (4) Sombre

97. David would drop in for a short visit and leave a ..... as a sign on grandma's porch if she was not at home.
(1) Schedule (2) Chunk of dirt
(3) Calling card (4) Cup of coffee

98. Grandmother used to be
(1) Rich in Italy but poor in the United States
(2) In the United States but is now in Italy
(3) Poor earlier but became rich later on
(4) Rich earlier but now poor

99. Grandmother enjoyed a ..... life.
(1) Healthy but sickly
(2) Good and healthy
(3) Rich but sickly
(4) Poor and healthy

100. Grandmother's death made everyone
(1) Sad including David
(2) Disconsolate excluding David
(3) Happy and disconsolate
(4) Sad excluding David

Short Answers

1. (4)	**2.** (1)	**3.** (3)	**4.** (4)	**5.** (3)	**6.** (4)	**7.** (2)	**8.** (2)	**9.** (3)	**10.** (2)
11. (1)	**12.** (3)	**13.** (4)	**14.** (2)	**15.** (1)	**16.** (2)	**17.** (1)	**18.** (1)	**19.** (4)	**20.** (1)
21. (2)	**22.** (4)	**23.** (3)	**24.** (2)	**25.** (1)	**26.** (2)	**27.** (2)	**28.** (3)	**29.** (1)	**30.** (4)
31. (3)	**32.** (2)	**33.** (1)	**34.** (3)	**35.** (3)	**36.** (4)	**37.** (1)	**38.** (2)	**39.** (4)	**40.** (1)
41. (4)	**42.** (2)	**43.** (4)	**44.** (1)	**45.** (4)	**46.** (4)	**47.** (4)	**48.** (3)	**49.** (1)	**50.** (3)
51. (1)	**52.** (4)	**53.** (2)	**54.** (1)	**55.** (1)	**56.** (1)	**57.** (1)	**58.** (2)	**59.** (2)	**60.** (4)
61. (3)	**62.** (3)	**63.** (2)	**64.** (2)	**65.** (3)	**66.** (3)	**67.** (2)	**68.** (1)	**69.** (3)	**70.** (3)
71. (4)	**72.** (3)	**73.** (4)	**74.** (1)	**75.** (3)	**76.** (2)	**77.** (3)	**78.** (1)	**79.** (2)	**80.** (4)
81. (2)	**82.** (2)	**83.** (1)	**84.** (2)	**85.** (4)	**86.** (3)	**87.** (3)	**88.** (3)	**89.** (3)	**90.** (4)
91. (1)	**92.** (1)	**93.** (1)	**94.** (1)	**95.** (2)	**96.** (3)	**97.** (2)	**98.** (3)	**99.** (2)	**100.** (1)

Hints & Solutions

PART-I
(GENERAL INTELLIGENCE & REASONING)

1. (4) Students go to college for higher studies. In the same way, patients go to hospital for treatment.

2. (1) D $\xrightarrow{+12}$ P | B $\xrightarrow{+12}$ N
H $\xrightarrow{+12}$ T | F $\xrightarrow{+12}$ R
L $\xrightarrow{+12}$ X | J $\xrightarrow{+12}$ V

3. (3) $(5)^3 - 1 = 125 - 1 = 124$
$\therefore$ $(7)^3 - 1 = 343 - 1 = 342$

4. (4) Except (Come: Arrive), all other pairs of words are antonyms.

5. (3) A $\xrightarrow{+6}$ G
W $\xrightarrow{+6}$ A
E $\xrightarrow{+15}$ T
I $\xrightarrow{+8}$ Q
$\therefore$ Difference between alphabets is in odd number as compared to other number pairs.

6. (4) $(1 \times 4) - (1 \times 2) \Rightarrow 4 - 2 = 2$
$(2 \times 4) - 7 \Rightarrow 8 - 7 = 1$
$(4 \times 2) - 4 \Rightarrow 8 - 4 = 4$
$(3 \times 7) - 4 \Rightarrow 21 - 4 = 17$
$\therefore$ Difference between the two numbers is in double digit as compared to other number pairs.

7. (2) Order in the dictionary:
REPAIR (2) $\rightarrow$ RESCUE (5) $\rightarrow$ RESEARCH (4) $\rightarrow$ RESIDUE (3) $\rightarrow$ RESIGN (1)

8. (2) J $\xrightarrow{+2}$ L $\xrightarrow{+2}$ N $\xrightarrow{+2}$ P $\xrightarrow{+2}$ R
A $\xrightarrow{+4}$ E $\xrightarrow{+4}$ I $\xrightarrow{+4}$ M $\xrightarrow{+4}$ Q
Z $\xrightarrow{-2}$ X $\xrightarrow{-2}$ V $\xrightarrow{-2}$ T $\xrightarrow{-2}$ R

9. (3) 19 + 9 = 28
28 + 11 = 39
39 + 13 = 52
52 + 15 = (67)
67 + 17 = 84

10. (2) R is the father of Y and X.
S is the maternal uncle of X and Y.
T is the sister of S.
$\therefore$ T is the wife of R.

11. (1) C > A > B
B > D > E
C > A > B > D > E
$\therefore$ C is the tallest.

12. (3) SOMNAMBULISM $\Rightarrow$ SOUL
$\therefore$ Only one word can be formed from the given word.

13. (4)

D	D	O	G	
↓	↓	↓	↓	
4	4	15	7	= 26

$\therefore$

A	N	I	M	A	L
↓	↓	↓	↓	↓	↓
1	14	9	13	1	12

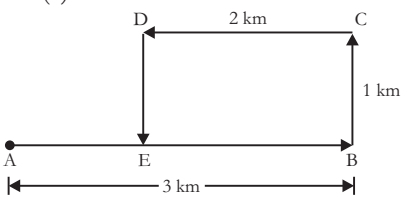
$= 1 + 14 + 9 + 13 + 1 + 12 = 50$

14. (2) $5 > 2 \times 1 - 3 > 4 < 1$
$\Rightarrow 5 \times 2 + 1 = 3 \times 4 - 1$
$\Rightarrow 11 = 11$

15. (1) $3 \times 4 \times 5 \rightarrow 4\ 3\ 5$
$4 \times 3 \times 2 \rightarrow 3\ 4\ 2$
$\therefore$ $2 \times 3 \times 4 \rightarrow$ [3 2 4]

16. (2) $6 \times 8 + 3 = 51$
$15 \times 4 + 5 = 65$
$\therefore$ $20 \times 5 + 20 =$ (120)

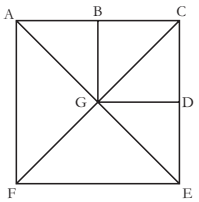
17. (1)



AB – EB = 3 – 2 = 1 km

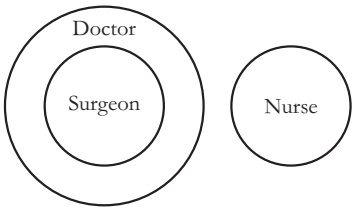
18. (1) Only conclusion I follows.

19. (4)



Triangles are:
GAF, GFE, ABG, GDE,
GBC, GDC, GEC, GAC,
AFE, AFC, CEF, ACE

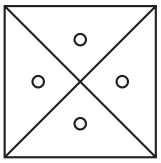
20. (1)



21. (2) Answer figure (2) completes the pattern of the given figure.

22. (4) Question figure is hidden in the answer figure (4).

23. (3)



24. (2) Answer figure (2) is exactly the mirror image of the given question figure.

25. (1) N $\Rightarrow$ 01, 13, 20, 32, **44**
E $\Rightarrow$ 02, **14**, 21, 33, 40
A $\Rightarrow$ 03, 10, 22, **34**, 41
T $\Rightarrow$ **56**, 68, 75, 87, 99

PART-II
(GENERAL AWARENESS)

26. (2) **Swachh Bharat:** It is India's biggest ever cleanliness campaign that was originally known as Nirmal Bharat Abhiyan and Total Sanitation Campaign from 1999 to 2012. The Nirmal Bharat Abhiyan Campaign was relaunched on 2 October, 2014 as Swachh Bharat Abhiyan (Clean India Mission) which aims to eradicate open defecation by 2019.

27. (2) **Mars Orbiter Mission (Mangalyaan):** India's first interplanetary mission launched by the Indian Space Research Organisation (ISRO) on 5 November 2013, it is a space probe orbiting Mars since 24 September 2014.

With the Mangalyaan's success, India became first Asian nation to reach Mars orbit and the first nation in the world to do so in its first attempt.

28. (3) Due to gravity, the Earth has an atmosphere. Gravity causes the gases to be held close to the earth instead of escaping into outer space. Besides, gravity makes the atmosphere denser closer to the Earth – the upper layers push down against the lower layers.

29. (1) **Frontal Lobe:** It plays a large role in voluntary movement. It houses the primary motor cortex which regulates activities like walking. The frontal lobes are also involved in problem solving, spontaneity, memory, language, initiation, judgement, impulse control, etc.

30. (4) Digestion in Protozoa is carried on by several enzymes such as peptidase, proteinase, lipase, etc. For example, Insulin has important role in the glucose uptake of protozoa. However, protozoa lack amylase which is required for the digestion of fats and starch. It is due to the absence of amylase that protozoa such as amoeba cannot digest fats and starch.

31. (3) An interesting property of matter is that its temperature remains constant during a phase change, assuming its surrounding pressure is constant. A liquid changes into gaseous state at a constant temperature called its boiling point.

For example, when water is converted into vapours (gaseous state) at 100°C and so 100°C is its boiling point.

The temperature remains constant at 100°C. The temperature of water increases only after all the water is evaporated. Likewise, once the temperature of a liquid is lowered to its freezing point, the temperature does not decrease until all the liquid has changed its phase to become a solid.

32. (2) **Ionosphere:** It is composed partly of electrons and positive ions. It is a region of Earth's upper atmosphere, from about 60 km to 1,000 km altitude, that is ionized by solar radiation. Ionosphere layer is also called thermosphere as its temperature rises with height.

33. (1) Excise duty on production few items including that on liquor is imposed by state governments. Excise duty on alcohol, alcoholic preparations, and narcotic substances is collected by the State Government and is called "State Excise" duty. For most of the states, excise duty is the second largest tax revenue after sales taxes (State VAT).

34. (3) **Adjournment Motion:** It is moved by a member when it is desired to draw the attention of the Executive for the purpose of discussing a definite matter of urgent public importance. It is an extraordinary procedure which, if admitted, leads to setting aside the normal business of the House for discussing a definite matter of urgent public importance.

35. (3) The main objective of monetary policy is to control the supply of money, often targeting an inflation rate or interest rate to ensure price stability and general economic growth. Further goals of a monetary policy are usually to contribute to lower unemployment and to maintain predictable exchange rates with other currencies.

36. (4) **Lord Mayo (1969–1872):** The Viceroy of India was assassinated by Sher Ali Afridi, an Afridi Pathan convict at Port Blair in the Andaman Islands on 8 February, 1872. His murderer appeared to be motivated only by a sense of injustice at his own imprisonment and had resolved to kill a high-ranking colonial official.

37. (1) Fiscal policy is the means by which a government adjusts its spending levels and tax rates to monitor and influence a nation's economy. It is used to stabilize the economy over the course of the business cycle. Fiscal policy is the sister strategy to monetary policy through which a central bank influences a nation's money supply.

38. (2) **The Theosophical Society:** It was officially formed in New York City, United States, on 17 November 1875 by Helena Petrovna Blavatsky, Colonel Henry Steel Olcott, William Quan Judge and others. It was formed as body of seekers after Truth, who endeavour to promote Brotherhood and strive to serve humanity.

39. (4) On 6 June 2015, India and Bangladesh, signed pact to operationalise the historic Land Boundary Agreement (LBA) between both nations. The operationalisation of LBA paves the way for exchange of 162 enclaves under the control of either countries as per the 1974 pact.

40. (1) Bezwada Wilson, a renowned campaigner against manual scavenging and Carnatic singer T.M. Krishna from Chennai were, on 27 July 2016, named for the prestigious Magsaysay Award.

Other winners are Conchita Carpio-Morales from Philippines, Dompet Dhuafa from Indonesia, Japan Overseas Cooperation Volunteers and Vientiane Rescue from Laos.

41. (4) **Field Marshal Sam Jamshedji Manekshaw:** He was the first Indian Army officer to be promoted to the five-star rank of field marshal. It was first conferred to Sam Manekshaw in 1973, as recognition to his service and leadership in 1971 Indo-Pakistan War. After Manekshaw, the second person to be conferred the rank was Kodandera M. Cariappa.

42. (2) Mahatma Gandhi said, "Earth provides enough to satisfy every man's need, but not every man's greed." What Gandhi meant was that the nature earth has enough resources and means to meet the basic requirements of a man but it can't serve the endless greed of man. He added that the rich must not only restrict their wants but must also treat their wealth as 'trust' for poor and use it for the welfare of poor.

43. (4) **Sakshi Malik:** The first Indian freestyle female wrestler to win a medal at the Olympics. On 18 August 2016 at Rio Olympics she won the bronze medal in the 58 kg category defeated Kyrgyzstan's Aisulnu Tynybekova in repechage round final.

44. (1) Sulphur dioxide (SO_2) is considered as the most serious single

air pollutant causing health hazard, obstructing breathing. It always leads to airways inflammation, eye irritation, psychic alterations, pulmonary oedema, heart failure and circulatory collapse. It is also responsible for acid rain.

45. (4) Deep-sea divers have their oxygen supply mixed with helium in order to avoid the toxic nature of oxygen under extreme pressures. The Helium atom is much smaller than the Nitrogen molecule, has a smaller electron cloud and is less polarizable. It, therefore, is less soluble in blood than nitrogen and prevents the formation of nitrogen bubbles in blood which blocks blood flow as the diver comes to the surface of the sea from underwater.

46. (4) Terylene is a co-polymer of ethylene glycol and terephthalic acid. It is also known as Dacron and is prepared by the condensation polymerization of ethylene glycerol and terephthalic acid with elimination of water. The reaction is carried out at about 420–460 K in the presence of a catalyst consisting of a mixture of zinc acetate and antimony trioxide.

47. (4) Data integrity is the maintenance of and the assurance of the accuracy and consistency of, data over its entire life-cycle. It is a critical aspect to the design, implementation and usage of any system which stores, processes or retrieves data. Data integrity is the opposite of data corruption, which is a form of data loss.

48. (3) When liquid is placed on a smooth surface like glass plate, the relative strengths of the cohesive and adhesive forces acting on that liquid determine the shape it will take (and whether or not it will wet the surface). If the adhesive forces between a liquid and a surface are stronger, they will pull the liquid down, causing it to wet the surface. However, if the cohesive forces among the liquid itself are stronger, they will resist such adhesion and cause the liquid to retain a spherical shape and bead the surface. Mercury drop remains spherical on a plate of glass because its cohesive force is greater than its adhesive force with glass.

49. (1) **Maldives:** In terms of area and population it is the smallest country not only in the Indian Ocean but also in Asia. There are over 1,192 coral islands in the Maldives, which are spread over 90,000 sq. km, making it one of the world's most dispersed countries. It lies in south-southwest of India and are considered part of Southern Asia.

50. (3) The Chairman of the Public Accounts Committee of the Parliament is appointed by the Speaker of Lok Sabha. Since 1967, the chairman of the committee is selected from the opposition. PAC is formed every year with a strength of not more than 22 members of which 15 are from Lok Sabha and 7 from Rajya Sabha.

PART-III
(QUANTITATIVE APTITUDE)

51. (1) 1 days work of (A + B) $= \frac{1}{6}$

1 day work of A $= \frac{1}{9}$

1 day work of B $= \frac{1}{6} - \frac{1}{9}$

$= \frac{3-2}{18} = \frac{1}{8}$

Required time = 18 days

52. (4) Area of trapezium $= \frac{1}{2}$ (sum of parallel sides) × perpendicular distance

$= \frac{1}{2}(20 + 16) \times 10$

$= \frac{1}{2} \times 36 \times 10$

$= 180\ m^2$

53. (2) Single equivalent discount for 15% and 20%

$= \left(20 + 15 - \frac{20 \times 15}{100}\right)\%$

$= (35 - 3)\% = 32\%$

Single equivalent discount for 32% and 25%

$= \left(32 + 25 - \frac{32 \times 25}{100}\right)\%$

$= 57 - 8 = 49\%$

54. (1) From the question,

$A = \frac{B}{2} = 3C \Rightarrow \frac{A}{1} = \frac{B}{2} = \frac{C}{\frac{1}{3}}$

$\therefore$ A : B : C = 1 : 2 : $\frac{1}{3}$ = 3 : 6 : 1

Sum of the terms of ratio

= 3 + 6 + 1 = 10

$\therefore$ C's share = ₹ $\left(\frac{1}{10} \times 490\right)$ = ₹ 49

55. (1) CP of article = ₹ x

Given, $\frac{94x}{100} + 64 = \frac{x \times 110}{100}$

$\Rightarrow \frac{110x}{100} - \frac{94x}{100} = 64$

$\Rightarrow \frac{16x}{100} = 64$

$\therefore x = \frac{64 \times 100}{16}$ = ₹ 400

56. (1) No. of students who wear spectacles $= \frac{1400 \times 25}{100} = 350$

$\therefore$ Girls who wear spectacles

$= \left(1 - \frac{2}{7}\right)$ of 350

$= 350 \times \frac{5}{7} = 250$

57. (1) Rate downstream = 18 kmph

Rate upstream = 12 kmph

$\therefore$ Speed of boat in still water $= \frac{1}{2}$ (rate downstream + rate upstream)

$\frac{1}{2}(18 + 12) = \frac{30}{2}$

= 15 kmph

58. (2) $\frac{(a+b)^2}{(a-b)^2} = \frac{25}{4}$

By componendo and dividendo,

$\frac{(a+b)^2 + (a-b)^2}{(a+b)^2 - (a-b)^2} = \frac{25+4}{25-4}$

or, $\frac{2(a^2+b^2)}{4ab} = \frac{29}{21}$

or, $\frac{a^2+b^2}{2ab} = \frac{29}{21}$

or, $\frac{a^2+b^2}{2 \times 21} = \frac{29}{21}$

or, $a^2 + b^2 = 2 \times 29 = 58$

$\therefore \quad a^2 + b^2 + 3ab = 58 + 3 \times 21$

$= 58 + 63$

$= 121$

59. (2) $(d^{s+t} \div d^s) \div d^t$

$= d^{s+t-s} \div d^t$

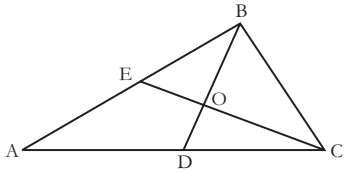
$= d^t \div d^t = 1$

60. (4) The sum of all the angles of a triangle = 180°.

From given option (4),

$50° + 60° + 70° = 180°$

61. (3)



Point 'O' is the centroid of triangle ABC.

$\therefore \quad OE = \frac{1}{3}CE$

or, $\quad 7 = \frac{1}{3}CE$

$\therefore \quad CE = 21$ cm

62. (3) $\sec^2\theta + \tan^2\theta = \sqrt{3}$

and $\sec^2\theta - \tan^2\theta = 1$

$\therefore \sec^4\theta - \tan^4\theta$

$= (\sec^2\theta + \tan^2\theta)(\sec^2\theta - \tan^2\theta)$

$= \sqrt{3} \times 1 = \sqrt{3}$

63. (2) Largest 6-digit number = 999999

9	999999	999
9	81	
189	1899	
9	1701	
1989	19899	
9	17901	
1998	1998	

$\therefore$ Required perfect square number

$= 999999 - 1998 = 998001$

64. (2) Average height of whole class

$= \left(\frac{30 \times 160 + 20 \times 165}{50}\right)$ cm

$= \left(\frac{4800 + 3300}{50}\right)$ cm

$= \left(\frac{8100}{50}\right)$ cm $= 162$ cm

65. (3) $(a-b)^3 = 2^3$

or, $a^3 - b^3 - 3ab(a-b) = 8$

or, $\quad 26 - 3ab \times 2 = 8$

or, $\quad 6ab = 26 - 8 = 18$

or, $\quad ab = \frac{18}{6} = 3$

$\therefore \quad (a+b)^2 = (a-b)^2 + 4ab$

$= (2)^2 + 4 \times 3 = 4 + 12 = 16$

66. (3) If $a + b + c = 0$, then

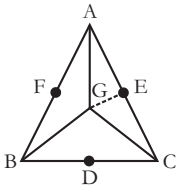
$a^3 + b^3 + c^3 - 3abc = 0$

Here, $x - 4 + y - 2 + z - 3$

$= x + y + z - 9 = 9 - 9 = 0$

$\therefore \quad (x-4)^3 + (y-2)^3 + (z-3)^3 - 3(x-4)(y-2)(z-3) = 0$

67. (2)



Medians intersect at point G.

$\therefore \quad \Delta ABG = \Delta BGC = \Delta AGC$

GE bisects ΔCGE

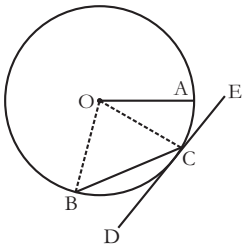
$\therefore \quad \Delta AGE = \Delta CGE$

$\therefore$ Area of ΔCGE

$= \frac{1}{6} \times$ Area of ΔABC

$= \frac{1}{6} \times 36 = 6$ sq. cm.

68. (1)



OB = OC = radii

$\therefore$ In ΔOBC,

OB = BC = CO

$\therefore \quad \angle OCB = \angle OBC = \angle BOC = 60°$

$OC \perp DE$

$\therefore \quad \angle BCD = 90° - 60° = 30°$

69. (3) $\pi \sin\theta = 1$ and $\pi \cos\theta = 1$

$\therefore \quad \frac{\pi \sin\theta}{\pi \cos\theta} = 1$

$\therefore \quad \tan\theta = 1 = \tan 45°$

$\Rightarrow \quad \theta = 45°$

$\therefore \quad \sqrt{3} \tan\left(\frac{2\theta}{3}\right) + 1$

$= \sqrt{3} \tan\left(\frac{2 \times 45°}{3}\right) + 1$

$= \sqrt{3} \tan 30° + 1$

$= \sqrt{3} \times \frac{1}{\sqrt{3}} + 1 = 1 + 1 = 2$

70. (3) Difference between C.I. and S.I. for 3 years

$= \frac{Pr^2(r+300)}{1000000}$

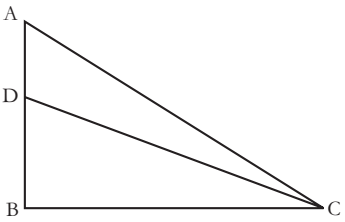
or, $\quad 93 = \frac{P \times 100(10+300)}{1000000}$

or, $\quad 93 = \frac{P \times 100 \times 310}{1000000}$

or, $\quad \frac{31P}{1000} = 93$

$\therefore \quad P = \frac{93000}{31} = ₹\ 3000$

71. (4)



AD = flag = x metre

AB = flagpost = h metre

BC = 30 metre

$\angle ACB = 45°$; $\angle DCB = 30°$

From ΔABC,

$\tan 45° = \frac{AB}{BC}$

$\Rightarrow \quad 1 = \frac{h}{30} \Rightarrow h = 30$ metre

From ΔBCD,

$\tan 30° = \frac{BD}{BC}$

$\Rightarrow \quad \frac{1}{\sqrt{3}} = \frac{h-x}{30}$

or, $\quad \frac{1}{\sqrt{3}} = \frac{30-x}{30}$

or, $\quad 30 - x = \frac{30}{\sqrt{3}} = 10\sqrt{3}$

$\therefore \quad x = 30 - 10\sqrt{3}$

$= 30 - 10 \times 1.732$

$= 30 - 17.32$

$= 12.68$ metre

72. (3) Average foreign exchange reserve

$$= \frac{(2640 + 3720 + 2520 + 3360 + 3120 + 4320 + 5040 + 3120)}{8} \text{ million dollar}$$

$$= \frac{27840}{8} = 3480 \text{ million dollar}$$

$\therefore$ Required ratio = 3 : 5

73. (4) Required per cent

$$= \frac{4320}{3480} \times 100 \approx 124\%$$

74. (1) Percentage increase

$$= \frac{5040 - 2520}{2520} \times 100$$

$$= \frac{2520}{2520} \times 100 = 100\%$$

75. (3) Required ratio

= (2640 + 3720 + 2520): (3120 + 4320 + 5040)

= 8880 : 12480 = 37 : 52

PART-IV (ENGLISH LANGUAGE)

76. (2) **Panacea (Noun):** Something that will solve all the problems of a particular situation.

77. (3) **Detest (Verb):** To hate somebody/something very much; loathe.

Adore (Verb): To love somebody very much.

78. (1) Correctly Spelt Word: Debilitate

79. (2) **Memorable (Adjective):** Unforgettable, special, good or unusual.

80. (4) **Implementation (Noun):** Carrying out; enactment; execution; application.

81. (2) **May** is used to express a wish.

82. (2) Error in part (2), 'has come' in place of 'have come' should be used here.

83. (1) Error in part (1), 'I and my wife' in place of 'Me and my wife' should be used here.

84. (2) Error in part (2), 'that requires much planning' in place of 'that requires many planning' should be used here.

85. (4) **Catch somebody redhanded:** To catch somebody in the act of doing something wrong or committing a crime.

86. (3) **Gate crasher:** One who goes to a party or social event without being invited.

87. (3) **To angle (go angling):** To catch fish with a line and a hook.

88. (3) **Nepotism:** Unfair advantages for members of your own family.

Sentence → He was guilty of nepotism and corruption.

89. (3) **Circumlocution:** Using more words than are necessary; instead of speaking or writing in a clear, direct way.

90. (4) **Juvenile:** is a young person who is not yet old enough to be regarded as a adult.

Sentence → Juvenile crime is increasing at a terrifying rate.

91. (1) **Incomparable (Adjective):** So good or impressive that nothing can be compared to it; matchless.

92. (1) **Beside:** Next to or at the side of somebody.

Sentence → He sat beside her all night.

93. (1) **No other reason** is a correct usage.

94. (1) Took root = taken root

95. (2) **Take care of:** look after.

96. (3) **Disconsolate (Adjective):** Very unhappy and disappointed; dejected.

Sentence → She looked so disconsolate when she lost the game.

Exuberant (Adjective): Full of energy; excitement and happiness.

Sentence → She gave an exuberant performance.

97. (2) Best option for blank → chunk of dirt.

98. (3) Best option for blank → poor earlier but became rich later on.

99. (2) Best option for blank → good and healthy.

100. (1) Best option for blank → sad including David.

❑❑❑