Previous Paper (Solved)

JAWAHAR NAVODAYA VIDYALAYA SELECTION TEST—2012*

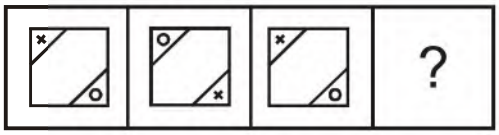
CLASS VI

SECTION-I: MENTAL ABILITY TEST

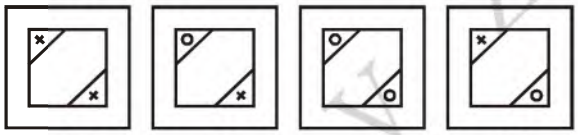
PART-I

Directions (Q. 1 to 10) : *There are three problem figures given below and the space for the fourth figure is left blank. The problem figures are in a series. Find out one figure from among the answer figures given below problem figures which occupies the blank space for the fourth figure and completes the series. Indicate your answer of the answer figure chosen by you in the box against the number corresponding to the questions in the answer sheet.*

1. Problem Figures

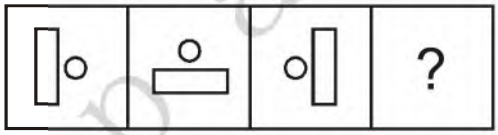


Answer Figures

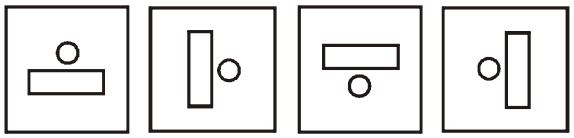


(A) (B) (C) (D)

2. Problem Figures

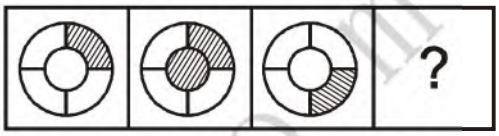


Answer Figures

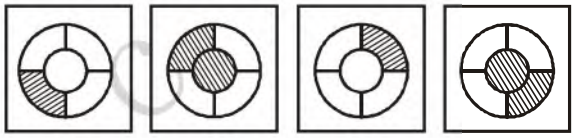


(A) (B) (C) (D)

3. Problem Figures

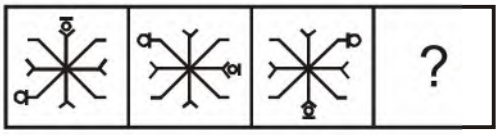


Answer Figures

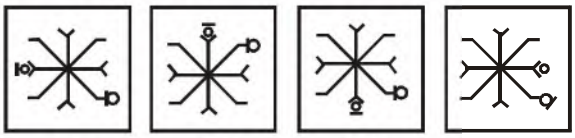


(A) (B) (C) (D)

4. Problem Figures

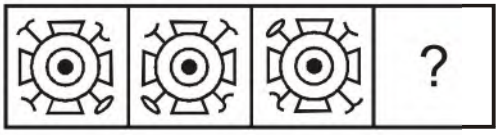


Answer Figures

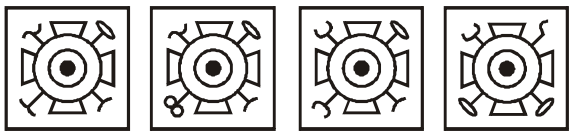


(A) (B) (C) (D)

5. Problem Figures



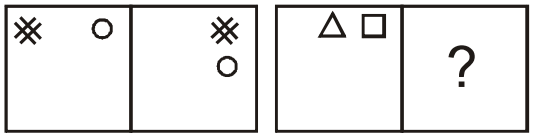
Answer Figures



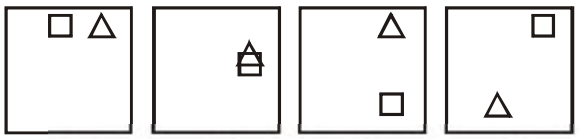
(A) (B) (C) (D)

*Based on memory

6. Problem Figures

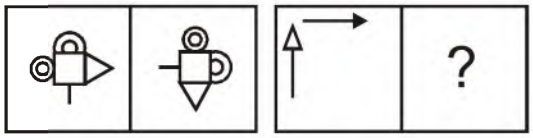


Answer Figures

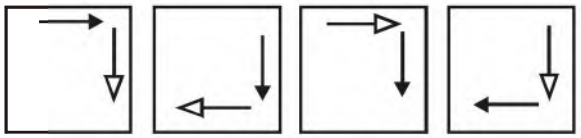


(A) (B) (C) (D)

7. Problem Figures

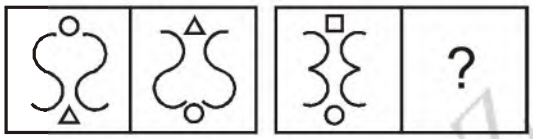


Answer Figures

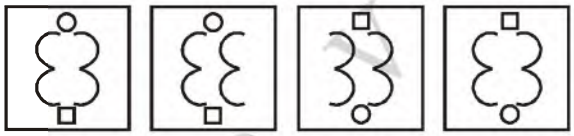


(A) (B) (C) (D)

8. Problem Figures

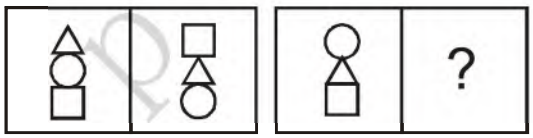


Answer Figures

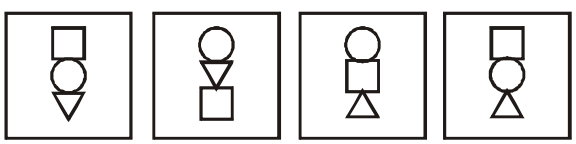


(A) (B) (C) (D)

9. Problem Figures

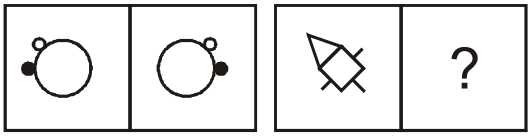


Answer Figures

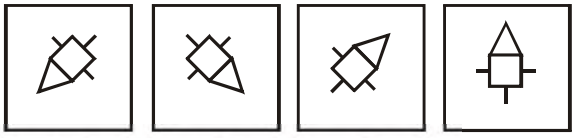


(A) (B) (C) (D)

10. Problem Figures



Answer Figures



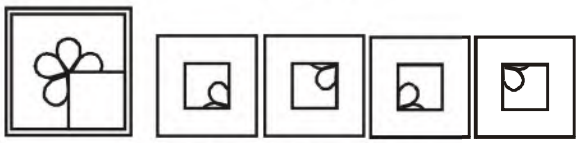
(A) (B) (C) (D)

PART-II

Directions (Q. 11 to 20) : *There is a problem figure on the left-hand side, a part of which is missing. Observe the answer figures (A), (B), (C) and (D) on the right-hand side and find out the answer figure which, without changing the direction, fits in the missing part of the problem figure in order to complete the pattern in the problem figure. Indicate your answer by letter of the answer figure chosen by you in the box against the number corresponding to the questions in the answer sheet.*

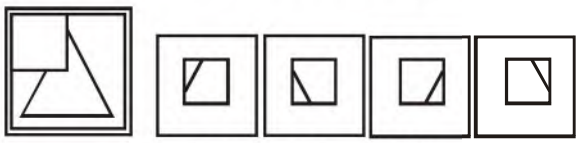
Problem Figure **Answer Figures**

11.



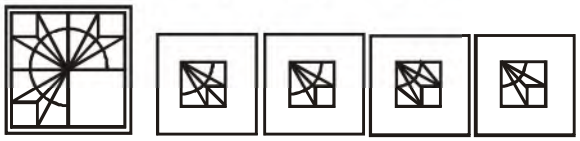
(A) (B) (C) (D)

12.



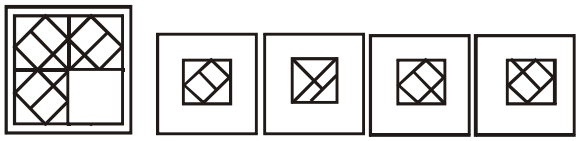
(A) (B) (C) (D)

13.

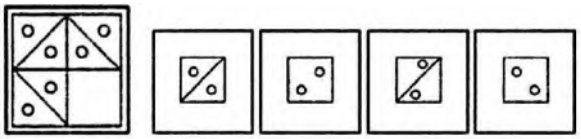


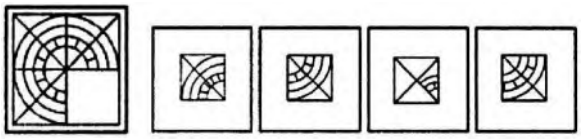
(A) (B) (C) (D)

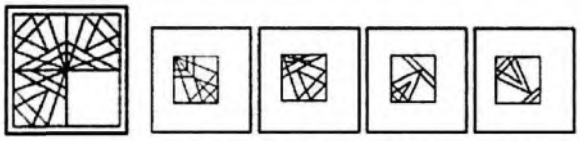
14.

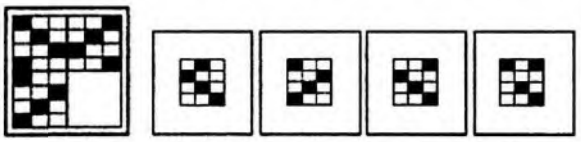


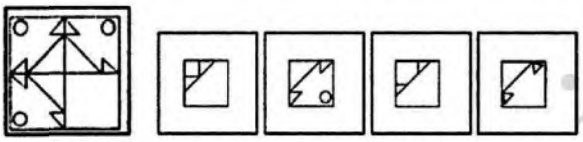
(A) (B) (C) (D)

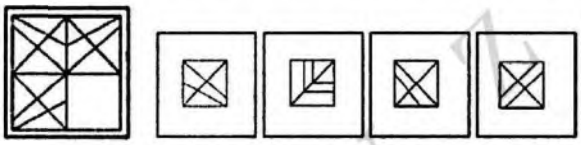
15. 
(A) (B) (C) (D)

16. 
(A) (B) (C) (D)

17. 
(A) (B) (C) (D)

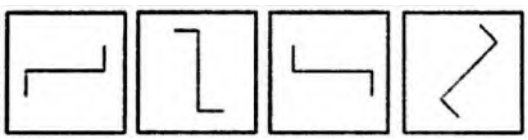
18. 
(A) (B) (C) (D)

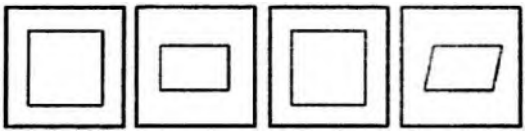
19. 
(A) (B) (C) (D)

20. 
(A) (B) (C) (D)

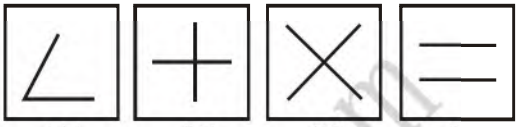
PART-III

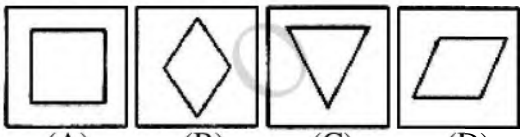
Directions (Q. 21 to 30) : *Four figures (A), (B), (C) and (D) have been given in each question. Of these four figures, three figures are similar in some way and one figure is different. Select the figure which is different and write your answer only in English letters (i.e., A, B, C and D) in the box against the number corresponding to the questions in the answer sheet.*

21. 
(A) (B) (C) (D)

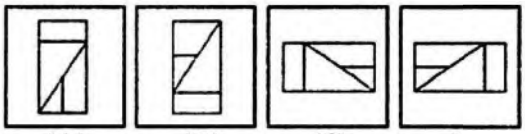
22. 
(A) (B) (C) (D)

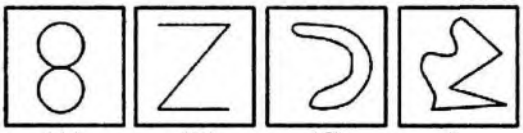
23. 
(A) (B) (C) (D)

24. 
(A) (B) (C) (D)

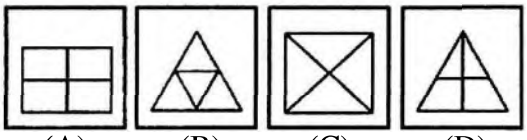
25. 
(A) (B) (C) (D)

26. 
(A) (B) (C) (D)

27. 
(A) (B) (C) (D)

28. 
(A) (B) (C) (D)

29. 
(A) (B) (C) (D)

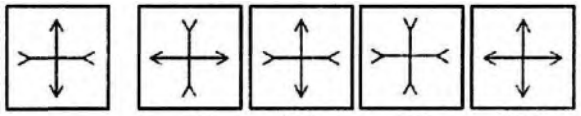
30. 
(A) (B) (C) (D)

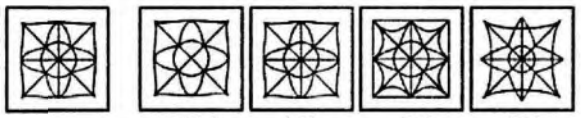
PART-IV

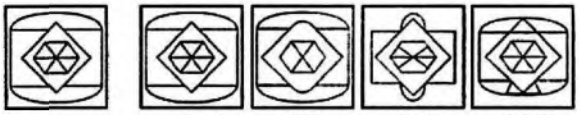
Directions (Q. 31 to 40) : *A problem figure is given on the left-hand side and four answer figures marked*

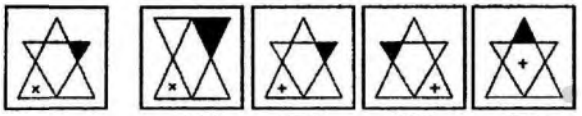
(A), (B), (C) and (D) are given on the right-hand side. Select the answer figure which is exactly the same as the problem figure and write your answer only in English letters (i.e., A, B, C and D) in the box against the number corresponding to the questions in the answer sheet.

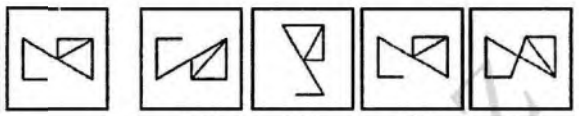
Problem Figure **Answer Figures**

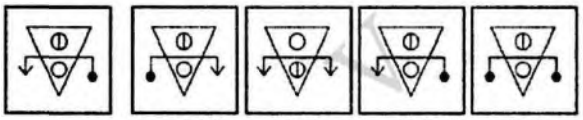
31. 
(A) (B) (C) (D)

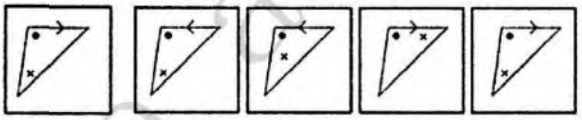
32. 
(A) (B) (C) (D)

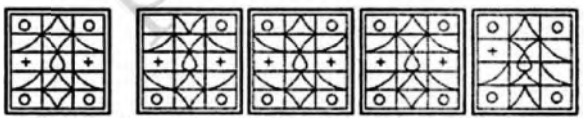
33. 
(A) (B) (C) (D)

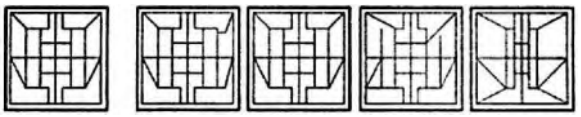
34. 
(A) (B) (C) (D)

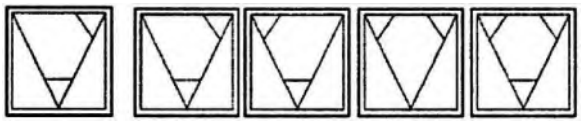
35. 
(A) (B) (C) (D)

36. 
(A) (B) (C) (D)

37. 
(A) (B) (C) (D)

38. 
(A) (B) (C) (D)

39. 
(A) (B) (C) (D)

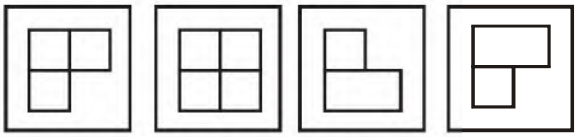
40. 
(A) (B) (C) (D)

PART-V

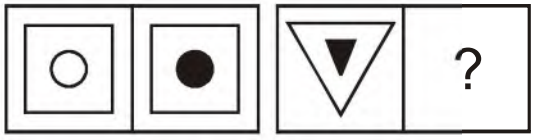
Directions (Q. 41 to 45) : *There are three problem figures followed by a mark of interrogation (?) for the fourth one. There exists a relationship between first two problem figures. A similar relationship should exist between the third and the fourth problem figures. Select one figure from the answer figures which replaces the mark of interrogation. Write the letter of the answer figure selected by you in the box against the number corresponding to the questions in the answer sheet.*

41. Problem Figures

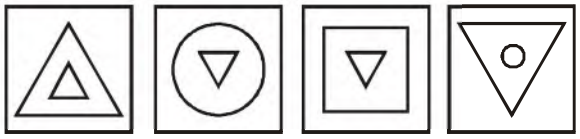
Answer Figures


(A) (B) (C) (D)

42. Problem Figures



Answer Figures

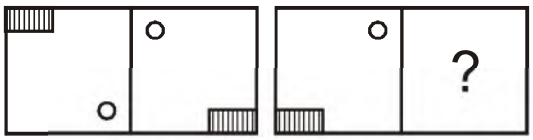

(A) (B) (C) (D)

43. Problem Figures

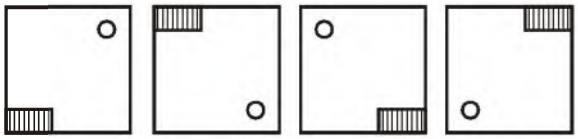
Answer Figures

(A) (B) (C) (D)

44. Problem Figures

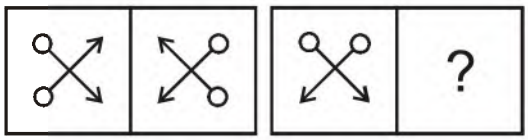


Answer Figures

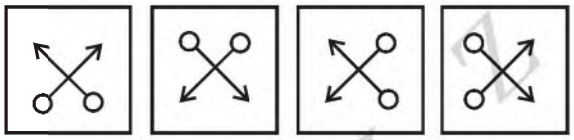


(A) (B) (C) (D)

45. Problem Figures



Answer Figures

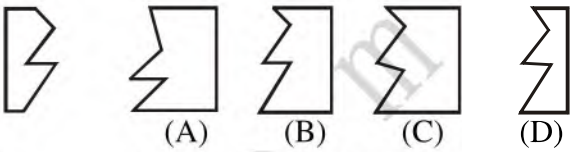


(A) (B) (C) (D)

PART-VI

Directions (Q. 46 to 50) : *One part of a square is on the left-hand side and the other one is among the four figures (A), (B) (C) and (D) on the right-hand side. Find the figure on the right-hand side that completes the square. Write the letter given below that figure in the box against the number corresponding to the questions in the answer sheet.*

Problem Figure **Answer Figures**

46. 

(A) (B) (C) (D)

47. 

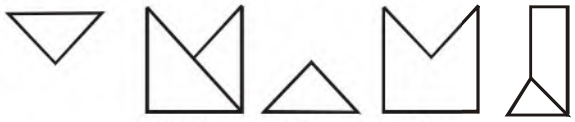
(A) (B) (C) (D)

48. 

(A) (B) (C) (D)

49. 

(A) (B) (C) (D)

50. 

(A) (B) (C) (D)

SECTION-II: ARITHMETIC

Directions (Q. 51 to 75) : *Each question has four options (A), (B), (C) and (D) for answers. Select the right answer and write in English letters in the box against each question in the enclosed answer sheet.*

51. 7 years ago, the ages (in years) of A and B were in the ratio 4 : 5; and 7 years hence they will be in the ratio 5 : 6. The present age of B is

(A) 56 years (B) 63 years
(C) 70 years (D) 77 years

52. Two numbers are such that their difference, their sum and their product are in the ratio of 1 : 7 : 24. The product of the numbers is

(A) 24 (B) 36
(C) 48 (D) 60

53. If A : B = 2 : 3, B : C = 4 : 5 and C : D = 5 : 9, then A : D is equal to

(A) 11 : 17 (B) 8 : 27
(C) 5 : 9 (D) 2 : 9

54. What is the difference between the compound interest and simple interest on ₹ 4000 at 5% per annum for 2 years?
(A) ₹ 10 (B) ₹ 11
(C) ₹ 20 (D) ₹ 100

55. The greatest number, that divides 43, 91 and 183 so as to leave the same remainder in each case, is
(A) 9 (B) 8
(C) 4 (D) 3

56. The missing term in the sequence 2, 3, 5, 7, 11, ... 17, 19 is
(A) 16 (B) 15
(C) 14 (D) 13

57. When the price of a toy was increased by 20%, the number of toys sold was decreased by 15%. What was its effect on the total sales of the shop?
(A) 2% increase (B) 2% decrease
(C) 4% increase (D) 4% decrease

58. Two numbers are in the ratio 5 : 6. If their H.C.F is 4, then their L.C.M. will be
(A) 90 (B) 96
(C) 120 (D) 150

59. A dealer marks his goods 30% above his cost price and then allows 15% discount on it. What is the cost price of an article on which he gains ₹ 84?
(A) ₹ 800 (B) ₹ 560
(C) ₹ 373.33 (D) ₹ 280

60. If the length of a rectangle is increased in the ratio 6 : 7 and its breadth is diminished in the ratio 5 : 4 then its area will be diminished in the ratio
(A) 17 : 16 (B) 15 : 14
(C) 9 : 8 (D) 8 : 7

61. Ram donated 4% of his income to a charity and deposited 10% of the rest in a Bank. If now he has ₹ 8640 left with him, then his income is
(A) ₹ 12,500 (B) ₹ 12,000
(C) ₹ 10,500 (D) ₹ 10,000

62. The sum of all the digits of the numbers from 1 to 100 is
(A) 5050 (B) 903
(C) 901 (D) 900

63. A General, while arranging his men, who were 6000 in number, in the form of a square, found that there were 71 men left over. How many were arranged in each row?
(A) 73 (B) 77
(C) 87 (D) 93

64. A number, when divided successively by 4, 5 and 6, leaves remainders 2, 3 and 4 respectively. The least such number is
(A) 50 (B) 53
(C) 19 (D) 238

65. A number, when divided by 296, gives 75 as the remainder. If the same number is divided by 37 then the remainder will be
(A) 1 (B) 2
(C) 19 (D) 31

66. If the length of a rectangle is increased by 10% and its breadth is decreased by 10%, then its area
(A) decreases by 1%
(B) increases by 1%
(C) decreases by 2%
(D) remains unchanged

67. If the product of two numbers is 21 and their difference is 4, then the ratio of the sum of their cubes to the difference of their cubes is
(A) 185 : 165 (B) 165 : 158
(C) 185 : 158 (D) 158 : 145

68. How many pairs of natural numbers are there so that difference of their squares is 60?
(A) 4 (B) 3
(C) 2 (D) 1

69. If *aabb* is a four digit number and also a perfect square then the value of $a + b$ is
(A) 12 (B) 11
(C) 10 (D) 9

70. If the sum of three consecutive odd numbers is a perfect square between 200 and 400, then the root of this sum is
(A) 15 (B) 16
(C) 18 (D) 19

71. A shopkeeper purchased 300 pens and sold one out of four pens at no loss or profit. He sold the remaining pens at a profit of 20%. What is his overall profit or loss per cent on the whole transaction?

(A) 15% profit (B) 15% loss
(C) 12% profit (D) 12% loss

72. The median of a triangle are equal. Then the nature of the triangle is
(A) Isoceles (B) Equilateral
(C) Scalene (D) Right-angled

73. By selling an article for ₹ 220 a man loses 12%. For how much he should sell so as to gain 16%?
(A) ₹ 290 (B) ₹ 250
(C) ₹ 310 (D) ₹ 270

74. A screwdriver and a hammer currently have the same price. If the price of a screwdriver rises by 5% and the price of a hammer goes up by 3%, how much more will it cost to buy 3 screwdrivers and 3 hammers?
(A) 3% (B) 4%
(B) 5% (B) 8%

75. By selling 100 oranges, a vendor gains the selling price of 20 oranges. His gain per cent is
(A) 20 (B) 25
(C) 30 (D) 32

SECTION-III: LANGUAGE

Directions (Q. 76 to 90) : *There are three passages in this Section. Each passage is followed by five questions. Read each passage carefully and answer the questions that follow. For each question four probable answers bearing letters (A), (B), (C) and (D) are given. Only one out of these is correct. You have to choose the correct answer and write the letter in the box against the letter corresponding to the question in answer sheet.*

PASSAGE–1

A Jeweller, when peeped through his shop into the lane, saw a well-dressed woman getting of her car. Along with her pet she moved forward and rang the bell. Curiously, the shopkeeper let her in. After an hour or so the curiosity subsided. The woman with utmost care looked at the trays containing diamond, at the counter in front of her nodded her head and asked for something else. In the end she asked for the tray-5 to be shown once again. The jeweller was very happy from within because the said tray contained the most valuable diamonds. When he brought the tray, the woman moved forward and dashed with the jeweller, resulting in all the diamond scattered hither-thither. The woman cut a sorry figure and jeweller looked at her timidly. She helped him picking the diamonds. In the meanwhile, she took out a piece of biscuit out of her purse and fed her dog. When jeweller could pick the pieces of diamonds he felt something to stop his heart beat. A 5 carat diamond was seen no where. Excitedly he looked around the entire floor but all in vein. Then he suspiciously looked at the woman and called the police. At the request of the jeweller the police searched the woman but could find nothing. The jeweller realized that the clever woman has cheated on him.

76. Why did the jeweller show curiosity while letting the woman in?
(A) because she was well-dressed
(B) because she rang the bell
(C) because she had a pet also
(D) because she was beautiful

77. In the above passage Tray-5 is important, because—
(A) It contained shining diamonds
(B) Whatever it contained, all scattered on the floor
(C) The female cut the sorry figure and the jeweller got desperate
(D) This tray was loving to the jeweller

78. What is the meaning of 'counter' in the passage?
(A) An article on which you count
(B) Re. to be used during playing cards
(C) An opposition
(D) A flat surface, on which articles are kept to sell

79. Police was called—
(A) The woman made the diamonds in tray-5 to fall down
(B) She was feeding her dog with biscuit and she did not like any of the diamonds
(C) A 5 carat diamond got disappeared
(D) She did not purchase anything from the tray

80. Then he looked at the woman with suspicion. What does the underline phrase mean—
(A) He looked at the woman as if she was not a woman
(B) He angrily looked at the woman, because she made the tray to fall down
(C) He looked in such a way as if the woman had cheated on him
(D) He looked at her suspiciously and the police arrested her

PASSAGE–2

In the year 2007 India became the 11th nation to join the trillioners club. It was the moment to pat your back, but the experts opined that we congratulated in haste. The country is suffering from evils like child marriage, poverty, diseases, casteism and communalism, therefore it is a matter of shame for all of us.

81. Which important event took place in the year 2007?
(A) India landed loan worth ₹ 1 trillion to 11 nations
(B) India became the 11th nation to take loan worth ₹ 1 trillion
(C) India is included among those prosperous countries, which had more than one trillion $
(D) India became the 11th nation to have no poor

82. When the writer says that we have congratulated ourselves in haste, he means—
(A) Indian wished each other very early in the morning
(B) India is proud to be counted as prosperous country
(C) We ought to celebrate the moment when there is no poor in the country
(D) People should have wished each other by the late evening

83. Which words mean—to feel pleasure—
(A) To pat one's own back
(B) To wish in haste
(C) Only some have become rich
(D) Country is still reeling under poverty

84. What was shame for India, according to the writer?
(A) India became rich quickly
(B) People are still unhappy
(C) Only some have become rich
(D) The government did not give employment to all

85. Which of the following sentences impart the meaning—evils like child marriage?
(A) Children in marriage are evils
(B) Child marriage is an evil
(C) We adopt evil methods to torture others
(D) To speak loudly with your parents, is an evil

PASSAGE–3

Two diseases of banana, spreading fast in Africa, are becoming danger to about 3 crore people who bank upon this fruit for their food and earning as well. To check this fast spreading disease, the scientists had an emergency meeting with policy makers. They found the disease incurable, therefore they suggested powerful scheme; such as ploughing the large banana fields, spray the insecticide or burn the plants. They felt, if steps were not taken in time, the disease would turn into epidemic and 90% of the crop would be destroyed.

86. Why did the writer say that the banana disease is becoming danger to the people?
(A) It would soon spread among the people and kill them
(B) It would soon destroy the crop, which is the means of living and earning of the people
(C) The trees would turn poisonous
(D) This would spread epidemic among the people

87. Why did scientists have emergency meeting?
(A) To find the solution of the problem
(B) To tell the government, that they have found out the solution
(C) To be awarded by the government
(D) To tell the government that the problem is serious

88. To check the disease, the scientists suggested—
(A) All the people should be inhabited elsewhere
(B) People should be given some other employment for their earning
(C) People should plant something else
(D) All the affected plants must be burnt out or sprayed with insecticide

89. Epidemic means—
(A) Frequently spread disease
(B) Drought
(C) A method to cure plants
(D) A disease to attack only human being

90. Which sentence is used to mean incurable disease?
(A) None could survive after contracting AIDS
(B) On spreading swine flu, to check the spread the government has to take strict steps
(C) The fire was so furious that the entire building turned into ashes within no time
(D) There was a powerful change in the people's life after the erection of factory in the village

Directions (Q. 91 to 92) : *Below are given four sentences (A), (B), (C) and (D). To make a stanza, arrange them in correct order and fill the box in the attached answer sheet, with English alphabet as correct answer.*

91. 1. The students were making too much noise.
2. The teacher was not in the class.
3. Everyone got the punishment.
4. The principal visited the class.
The correct order is—
(A) 1, 2, 3, 4 (B) 3, 2, 1, 4
(C) 4, 2, 1, 3 (D) 2, 1, 4, 3

92. 1. Her mother was not at home.
2. Nina was hungry.
3. She purchased chocolate for herself.
4. She went to the nearby shop.
The correct order is—
(A) 1, 2, 3, 4 (B) 2, 1, 4, 3
(C) 3, 2, 1, 4 (D) 3, 1, 2, 4

Directions (Q. 93 to 94) : *Complete the sentence with the most appropriate option and fill the box in the attached answer sheet with English alphabet as correct answer—*

93. I wanted to stay back at home because—
(A) The train was leaving
(B) I wanted to sleep
(C) The bananas were purchased
(D) I like the apples

94. The child was crying because—
(A) He wanted to read the book
(B) India had won the match
(C) He was hungry
(D) It was raining outside

Directions (Q. 95 to 97) : *Read each sentence to find out whether there is any error in it, the error, if any, will be in one part of the sentence. The number of that part is the answer.*

95. Gandhiji was a (A) / men who (B) / become a legend (C) / in his own life time. (D)

96. The travel agency made (A) / all the arrangements (B) / for our journey (C) / for England. (D)

97. The question was (A) / so difficult that (B) / nobody were (C) / able to answer it. (D)

Directions (Q. 98 to 100) : *Below are given certain words to be filled in the blanks. Choose the correct word and fill the box in the attached answer sheet, with English alphabet as correct answer.*

98. I like oranges.....
(A) more (B) usually
(C) less (D) pleasure

99. He sleeps the whole day and studies ..... night.
(A) in (B) at
(C) on (D) for

100. ..... picture is very beautiful.
(A) This (B) They
(C) These (D) Some

ANSWERS

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

SOME SELECTED EXPLANATORY ANSWERS

1. In each subsequent figure the designs of upper left corner and lower right corner are changing their places with each other.

2. In each subsequent figure the design is rotating through 90° anticlockwise.

3. In second figure from first the middle circle becomes black. Similarly, in fourth figure from third the middle circle will become black.

4. In each subsequent figure the both designs on the sides of main design are forming after leaving one side anticlockwise.

5. In each subsequent figure the four designs on the main design are shifting one side anticlockwise.

6. In second figure from first the first design shifts half side clockwise in the same direction and the second design shifts one side.

7. In second figure from first the design rotates through 90° clockwise.

8. In second figure from first the upper and lower designs change their places mutually and rest both designs form after reversing.

9. In second figure from first the designs shift one place lower side respectively and the lowest design reaches of the top.

10. In second figure from first the design forms with its mirror image.

21. In all the rest designs are same as '┌┘' when rotate.

22. In all the rest designs form with horizontal and vertical lines only.

23. In all the rest letters are formed with only two lines.

24. Except (D), in all the three figures, the line segments are either joined or intersected at one point whereas in figure (D) they are in parallel. Hence, (D) is required answer.

25. Except (C), in all the three figures, the main figure is made by four sides, whereas it is made by three sides in figure (C). Hence (C) is required answer.

26. In all the rest three designs are same except size.

27. In all the rest two lines are perpendicular with each other.

28. In all the rest there are curve lines.

29. Except (C), all the figures are divided into three parts by the line segments, whereas the figure (C) into four parts. Hence, (C) is the required answer.

30. In all the rest four parts of designs are same.

41. In second figure from first the one-fourth part of design completes the design.

42. In second figure from first the middle part of design forms after becoming coloured. So in fourth figure from third the middle part of design will form plane from coloured.

43. In second figure from first the design reverses and leaving middle part the rest part becomes coloured.

44. In second figure from first both designs change their places and vertical lines inside rectangle become diagonally slant.

45. In second figure from first the design reverses horizontaly or makes mirror image.

51. Let present age of A = x years

and age of B = y years

According to question,

$$\frac{x-7}{y-7} = \frac{4}{5}$$

$$5x - 35 = 4y - 28$$

$$5x - 4y = 7 \quad ...(i)$$

After 7 years

$$\frac{x+7}{y+7} = \frac{5}{6}$$

$$6x + 42 = 5y + 35$$

$$6x - 5y = -7 \quad ...(ii)$$

From (i) and (ii)

$$5x - 4y = 7 \;]\times 6$$

$$6x - 5y = -7 \;]\times 5$$

$$30x - 24y = 42$$

$$30x - 25y = -35$$

$$- \quad + \quad +$$

$$y = 77$$

Putting the value of x in (i)

$$5x = 7 + 4y$$

$$5x = 308 + 7$$

$$x = \frac{315}{5} = 63$$

$\therefore$ The present age of B = 77 years.

52. Let numbers are a and b

According to the question

Difference = $a - b$

Sum = $a + b$

Product = ab

$a-b$	:	$a+b$	:	ab
1	:	7	:	24
2	:	14	:	48

$\therefore$ Numbers are 8 and 6

$\therefore$ Their product = $8 \times 6 = 48$

53. $\because$ $\frac{A}{B} = \frac{2}{3}$; $\frac{B}{C} = \frac{4}{5}$; $\frac{C}{D} = \frac{5}{9}$

$$\frac{A}{D} = \frac{A}{B}\times\frac{B}{C}\times\frac{C}{D} = \frac{2}{3}\times\frac{4}{5}\times\frac{5}{9} = \frac{8}{27}$$

54. $SI = \frac{4000\times5\times2}{100} = ₹\,400$

$$A = 4000\left(1+\frac{5}{100}\right)^2 = 4000\times\frac{21}{20}\times\frac{21}{20} = 4410$$

C.I. = 4410 – 4000 = ₹ 410

CI – SI = 410 – 400 = ₹ 10

55. In this type questions. The required greatest number is the HCF of the difference of the given numbers.

$\therefore$ (i) $\begin{array}{r} 91 \\ -43 \\ \hline 48 \end{array}$ (ii) $\begin{array}{r} 183 \\ -43 \\ \hline 140 \end{array}$ (iii) $\begin{array}{r} 183 \\ -91 \\ \hline 92 \end{array}$

Now three numbers are 48, 140 and 72 and their HCF will be 4.

Hence the required greatest number = 4

56. The missing term in the given sequence is 13 because they are prime numbers.

57. Sales = Price per toy set × Number of toys sets sold

Let the initial price per toy set be ₹ x and the number of toy sets sold be y

Initial sales = ₹ xy

After price increase

The price per toy set = ₹ $1.20\,x$

Number of toy sets sold = $0.85\,y$

Sales = ₹$(1.20 \times 0.85)xy$ = ₹ $1.02\,xy$

$$\% \text{ increase in sales} = \left(\frac{1.02xy - xy}{xy}\right) \times 100\% = 2\%$$

58. Let numbers are $5x$ and $6x$

HCF of $5x$ and $6x = x$

According to the question

$$x = 4$$

$\therefore$ Numbers are 20 and 24

$$\therefore \text{ LCM} = \frac{20 \times 24}{4} \left[\text{LCM} = \frac{\text{Product of nos.}}{\text{HCF}}\right]$$

LCM = 120

59. Let CP of goods = ₹ 100

MP = ₹ 130

$$\text{Dis} = \frac{15}{100} \times 130 = ₹\ 19.50$$

SP = 130 – 19.50 = 110.50

Profit = 110.50 – 100 = 10.50

When profit ₹ 10.50 then CP = ₹ 100

$$\text{When profit ₹ 84 then CP} = \frac{100}{10.50} \times 84$$

CP = ₹ 800

62. $1 + 2 + 3 + 4 + \ldots\ldots\ldots + 100$

$$S = \frac{100 \times 101}{2} = 5050 \qquad \left(S = \frac{n(n+1)}{2}\right)$$

63. 6000 – 71 = 5929

Number of men in each row = $\sqrt{5929} = 77$

64. The least no = 238

65. 296 + 75 = 371

$$371 \div 37 = 10\frac{1}{37}$$

when 371 is divided by 37 gives remainder 1.

67. $7 \times 3 = 21$; $\quad 7 - 3 = 4$

$(7)^3 + (3)^3 = 343 + 27 = 370$

$(7)^3 - (3)^3 = 343 - 27 = 316$

$$\text{Ratio} = \frac{370}{316} = \frac{185}{158}$$

68. $\because \quad a^2 - b^2 = 60$

$(a + b)(a - b) = 60$

$(8 + 2)(8 - 2) = 60$

$(16 + 14)(16 - 14) = 60$

There are two pairs of natural numbers.

(8, 2) and (16, 14) so that difference of their square is 60.

69. 7744 its square root is 88

7 + 4 = 11

70. Three consecutive numbers are 73, 75, 77

Sum of these numbers = 225

Square root of 225 = 15

71. Out of 4 pen sold 1 pen

$$300 \text{ pen sold} = \frac{1}{4} \times 300 = 75$$

300 – 75 = 225 pens.

Remaining pens he sold at a profit of 20%

$$\therefore \quad \text{Profit} = \frac{20}{100} \times 225 = ₹\ 45$$

$$\% \text{ profit} = \frac{45}{300} \times 100 = 15\%$$

72. Equilateral

73. 100 – 12 = 88

when SP ₹ 88 then CP = ₹ 100

$$\text{when SP ₹ 220 then CP} = \frac{100}{88} \times 220$$

$\therefore \quad$ CP = ₹ 250

100 + 16 = 116

when CP ₹ 100 then SP = ₹ 116

$$\text{when CP ₹ 250 then SP} = \frac{116}{100} \times 250$$

$\therefore \quad$ SP = ₹ 290

74. Let cost of each price = ₹ 100

Total CP = 300 + 300 = ₹ 600

Total CP after price rise

= (105 × 3 = 315) + (103 × 3 = 309)

= 315 + 309 = ₹ 624

Diff = 624 – 600 = 24

$$\% = \frac{24}{600} \times 100 = 4\%$$

75. 100 – 20 = 80

At 80 oranges gain 20 oranges.

$$\text{At 100 oranges} = \frac{20}{80} \times 100 = 25\%$$