Jawahar Navodaya Vidyalaya

Entrance Exam Class IX

SOLVED PAPER 2019

Part I हिन्दी

1. शुद्ध रूप छाँटिए
(a) कृपया (b) किरपा (c) कृप्या (d) क्रिप्या

2. 'अजेय' का विलोम शब्द होता है
(a) विजित (b) परास्त (c) जेय (d) पराजित

3. 'अंगुली पर नचाना' का उपयुक्त अर्थ है
(a) इशारा करना (b) वश में रखना
(c) बहुत मेहनत करना (d) ताने देना

4. 'जहाँ जाना कठिन हो' उसे कहते हैं
(a) दुर्गम (b) कठिनतम
(c) कष्टपूर्ण (d) अगम्य

5. पच्चीस वर्ष पूरे करने के उपलक्ष्य में हमारा विद्यालय ..... मनाएगा।
(a) स्वर्ण जयन्ती (b) रजत जयन्ती
(c) कांस्य जयन्ती (d) हीरक जयन्ती

6. "आँकना" शब्द का पर्यायवाची है
(a) तोलना (b) परखना
(c) मोलभाव करना (d) अनुमान लगाना

7. निम्नलिखित में से वाक्य के शुद्ध रूप का चयन कीजिए
(a) वह दस कक्षा में पढ़ता है।
(b) वह दसवीं कक्षा में पढ़ता है।
(c) वह दसवें कक्षा में पढ़ता है।
(d) वह दशमीं कक्षा में पढ़ता है।

8. 'आशा', 'अविश्वसनीय', 'प्रोत्साहित' तथा 'यह' शब्दों में से क्रिया कौन सी है?
(a) आशा (b) अविश्वसनीय
(c) प्रोत्साहित (d) यह

9. 'अपादान' कारक की विभक्ति है
(a) ने (b) को
(c) से (d) को, के लिए

10. 'कार्तिकेय' में निम्नलिखित में से कौन-सा समास है?
(a) कर्मधारय (b) तत्पुरुष (c) द्विगु (d) बहुव्रीहि

निर्देश *निम्नलिखित अनुच्छेद को ध्यानपूर्वक पढ़कर दिए गए प्रश्नों के उत्तर के लिए सही विकल्प का चयन कीजिए।*

महात्मा ज्योतिबा फुले (ज्योतिराव गोविंदराव फुले) को 19वीं सदी का प्रमुख समाज सेवक माना जाता है। ज्योतिबा का लालन-पालन सगुनाबाई नामक एक दाई ने किया। जातिगत भेद-भाव के कारण उन्हें विद्यालय छोड़ना पड़ा। अरबी-फारसी के विद्वान गफ्फार बेग मुंशी एवं फादर लिजीट साहब ज्योतिबा के पड़ोसी थे। उन्होंने बालक ज्योतिबा की प्रतिभा एवं शिक्षा के प्रति रुचि देखकर उन्हें पुनः विद्यालय भेजने का प्रयास किया। वह अपने मित्र सदाशिव बल्लाल गोंडवे के साथ समाज, धर्म और देश के बारे में चिन्तन किया करते। उन्हें शिक्षा से वंचित रखा जाता था। ज्योतिबा को इस स्थिति पर बड़ा दुःख होता था। उन्होंने स्त्री और दलितों की शिक्षा के लिए सामाजिक संघर्ष का बीड़ा उठाया।

11. ज्योतिबा फुले को स्कूल ..... के कारण छोड़ना पड़ा।
(a) समाज सुधारक होने (b) शिक्षा में मन न लगने
(c) अनाथ होने (d) जातिगत भेद-भाव

12. ज्योतिबा फुले का पोषण किसने किया?
(a) उनकी माँ ने (b) एक दाई ने
(c) उनके पिता ने (d) समाज ने

13. ज्योतिबा फुले ने किसके उद्धार के लिए काम किया?
(a) केवल स्त्री शिक्षा (b) दलितों
(c) दलितों और स्त्री शिक्षा (d) सभी की शिक्षा

14. ज्योतिबा फुले किस के साथ देश के बारे में चिन्तन करते थे?
(a) सदाशिव बल्लाल गोंडवे (b) गफ्फार बेग मुंशी
(c) फादर लिजीट (d) सगुनाबाई

15. 'विद्वान्' शब्द का विलोम है:
(a) निरक्षर (b) साक्षर (c) मूर्ख (d) अहंकारी

Part II English

Directions (Q. 16 to 19) *Answer by choosing the appropriate option to complete the passage/sentence.*

We should remember that all religions preach good …… (16) in life, the …… (17) of which should rest on ethics. Without the basis of morality, philosophy would remain …… (18) polemics and religion meaningless or in vain. Nobody can say that she is religious …… (19) she is truthful.

16. (a) behaviour (b) deportment
(c) appearance (d) conduct

17. (a) basis (b) foundation
(c) fundamental (d) ground

18. (a) mere (b) simply
(c) merely (d) only

19. (a) if (b) until (c) unless (d) till

20. Fill in the blank.
A family …… an educated mother is an advanced family.
(a) with (b) of (c) without (d) including

Direction (Q. Nos. 21 and 22) *Which option fits best in the blanks?*

21. The doctor …… an operation.
(a) do (b) performed
(c) is performed (d) done

22. He thought my car …… for sale.
(a) is (b) was (c) has been (d)going

Direction (Q. Nos. 21 and 22) *Which option can replace the underlined words?*

23. The Principal asked the students to give their request black and white.
(a) Written in black (b) Painted in black colour
(c) Written form (d) As the form of speech

24. The minister was accused of indulging in nepotism.
(a) hatred (b) partiality
(c) condemnation (d) indifference

25. Select the alternative which best expresses the same sentence in indirect speech.
Socrates said, "Virtue is its own reward"
(a) Socrates said that virtue had its own reward
(b) Socrates said that virtue is its own reward
(c) Socrates said that virtue was its own reward
(d) Socrates said that virtue have its own reward

26. Select the alternative which best expresses the same sentence in active/passive voice.
A week is made of seven days
(a) There are seven days in a week
(b) Seven days makes a week
(c) A week has seven days
(d) Seven days make a week

Passage

Read the following passage and answer Q. 27-30

Just as some men like to play football or cricket, so some men like to climb mountains. This is often very difficult to do so, for mountains are not just big hills. Paths are usually very steep. Some mountain sides are straight up and down, so that it may take many hours to climb as little as one hundred feet. There is always the danger that you may fall off and be killed or injured. Men talk about conquering a mountain. It is a wonderful feeling to reach the top of a mountain after climbing for hours and may be, even for days. You look down and see the whole country below you. You feel god-like. Two Italian prisoners of war escaped from a prison camp in Kenya during the war. They did not try to get back to their own country, for they knew that was impossible. Instead, they climbed to the top of Mount Kenya, and then they came down again and gave themselves up. They had wanted to get that feeling of freedom that one has, after climbing a difficult mountain.

27. Some men like to climb mountains because
(a) they know the trick of climbing
(b) they don't like to play football or cricket
(c) they want to have wonderful feeling
(d) they like to face danger

28. To climb mountains is often difficult because
(a) mountains are big hills
(b) it consumes more time
(b) prisoners often escape from camps and battle there
(d) paths are steep and uneven

29. Mountaineering is not a very popular sport like football or cricket because
(a) there are no spectators in this sport
(b) it may take many hours or even days
(c) not many people are prepared to risk their lives
(d) people don't want to enjoy a god-like feeling

30. It is a wonderful feeling …… . It refers to
(a) the steep path
(b) the prisoners
(c) the mountain
(d) mountaineering

Part III Mathematics

Directions *For each question* (Q. Nos. 31 to 65) *four possible choices have been given, out of which only one is correct. You are to select the correct answer and fill in the OMR sheet.*

31. Which one of the following rational number is additive identity for rational numbers?
(a) 0 (b) 1 (c) 2 (d) 3

32. Multiplicative invese of $\frac{0}{1}$ is
(a) 1 (b) –1 (c) 0 (d) undefined

33. Which one of the following will have odd unit digit?
(a) 52^2 (b) 56^2 (c) 57^2 (d) 58^2

34. How many natural numbers lie between 52^2 and 53^2?
(a) 101 (b) 104 (c) 107 (d) 110

35. The unit digit in cube of 143 is
(a) 1 (b) 3 (c) 7 (d) 9

36. Which one of the following numbers is a perfect cube?
(a) 2836 (b) 4094 (c) 1828 (d) 1331

37. If $\sqrt[3]{0.000125} = x$, then $x =$
(a) 0.05 (b) 0.005
(c) 0.5 (d) 0.0005

38. In a number pattern 27, 64, 125, y, the value of y will be
(a) 37 (b) 216
(c) 61 (d) 186

39. The standard form of 0.0000040 is
(a) 4.0×10^{-4} (b) 4.0×10^{-5}
(c) 4.0×10^{-6} (d) 4.0×10^{-7}

40. $(3/4)^5 / (5/3)^5 = ?$
(a) $(3/4/5/3)^5$ (b) $(3/4/5/3)^0$
(c) $(3/4 \times 5/3)^5$ (d) $(3/4/5/3)^{10}$

41. A toy is purchased at ₹ 1320 including 5% SGST and 5% CGST. The actual price of the toy without GST is
(a) ₹ 1400 (b) ₹ 1300
(c) ₹ 1200 (d) ₹ 1150

42. A shopkeeper sells a pen set at 20% profit to another shopkeeper who sells it at a loss of 20%. If price of pen set was ₹ 112, what is net profit or loss on total transaction?
(a) 2% loss (b) 2% profit
(c) 4% profit (d) 4% loss

43. The difference of the compound interest and the simple interest on ₹ 50000 at 4% annually for 2 yr will be
(a) ₹ 40 (b) ₹ 50 (c) ₹ 80 (d) ₹ 160

44. Which of the following vary inversely with each other?
(a) speed and distance covered
(b) speed and time taken
(c) distance travelled and time taken
(d) distance covered and fare paid

45. A student reaches her school in 20 min with an average speed of 12 km/h. If she wants to reach her school 8 min earlier, her speed should be
(a) 8 km/h (b) 12 km/h
(c) 20 km/h (d) 15 km/h

46. Which of the following is an identity?
(a) $(z-x)^2 = z^2 + x^2$ (b) $z^2 - x^2 = (z+x)^2$
(c) $(z-x)^2 = z^2 + 2zx - x^2$ (d) $(z-x)^2 = z^2 - 2zx + x^2$

47. The irreducible factorisation of $(121x^2 - 169y^2)$ is
(a) $(11x + 13y)(11x - 13y)$ (b) $(11x^2 - 13y^2)$
(c) $(11x + 13)(11x + 13y)$ (d) $(11x - 13y)^2$

48. $(999)^2 - (995)^2 = ?$
(a) 1894 (b) 1994
(c) 2094 (d) 7976

49. $-3x^2y^2 + x^2y^2 - 2x^2y^2 = ?$
(a) $4x^2y^2$ (b) $6x^2y^2$
(c) $-4x^2y^2$ (d) $-6x^2y^2$

50. The area of rectangle is $5(y+3)(y^2-16)$. It's one side is $5(y^2 - y - 12)$. What is its other side?
(a) $(y-12)$ (b) $(y-15)$ (c) $(y-4)$ (d) $(y+4)$

51. Twenty one added to thrice a whole number gives 99. The number is
(a) 26 (b) 27 (c) 28 (d) 29

52. The sum of five consecutive odd numbers is 295. The smallest number is
(a) 51 (b) 53 (c) 55 (d) 57

53. The present age of the father is three years less than five times the age of his son. After 5 yr the age of father will be 3 yr more than three times the age of the son. The present age of the son is
(a) 8 yr (b) 7 yr
(c) 6 yr (d) 9 yr

54. The unit digit in a two digit number is two times the digit in tens place. If the digits are replaced with each other, the number becomes 18 more than the first number. What is the first number?
(a) 12 (b) 36 (c) 48 (d) 24

55. If the interior angle of a regular polygon is 108°. The polygon has …… sides.
(a) 4 (b) 5 (c) 6 (d) 10

56. The angles of a quadrilateral are in the ratio 1 : 2 : 3 : 4. The largest angle is
(a) 36° (b) 72°
(c) 144° (d) 108°

57. How many non-overlapping triangles can be formed in 11 sided polygon by joining the vertices?
(a) 11 (b) 10 (c) 8 (d) 9

58. A cube whose side is 5 cm will have total surface area = …… cm^2.
(a) 150 (b) 60 (c) 80 (d) 120

59. A regular hexagon is inscribed in a circle of radius 6 cm. The perimeter of the regular hexagon is … cm.
(a) 18 (b) 72
(c) 36 (d) 48

60. If the radius of a cylinder is increased from 4 cm to 16 cm and the surface area of it kept same. If its height is 4 cm, what will be its new height?
(a) 4 cm (b) 1 cm (c) 2 cm (d) 3 cm

61. The volume of a cylinder which exactly fits into a cube of side 4 cm is …… π cm^3.
(a) 8 (b) 16 (c) 24 (d)48

62. A cube with $5y$ side will have …… volume.
(a) $27y^3$ (b) $25y^3$
(c) $50y^3$ (d) $125y^3$

63. The dimensions of a godwon are 20m, 25m and 10m. In this how many boxes of the dimension 2 m × 1.25 m × 1m can be kept?
(a) 2000 (b) 4000
(c) 6000 (d) 8000

64. The possibility of getting an odd number when a dice is rolled is
(a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{2}{3}$

65. The first and the second class interval of a grouped data are 5-10, 10-15. Its fifth class interval is
(a) 20-25 (b) 25-30 (c) 30-35 (d) 35-40

Part IV General Science

Directions (Q. Nos. 66 to 100) *For each question four possible choices have been given, out of which only one is correct. You are to select the correct answer and fill in OMR sheet.*

66. Which one of the following is not an essential condition to grow maize?
(a) Humidity (b) Low temperature
(c) Rainfall (d) High temperature

67. Which of the following tools is used by the farmer to remove weeds from the field?
(a) Hoe (b) Plough
(c) Axe (d) Cultivator

68. Pathogenic microorganisms present in host cells are killed by …… medicines.
(a) antibiotics (b) antibodies
(c) pain killer (d) vaccines

69. Penicillin was discovered by
(a) Louis Pasteur (b) Robert Koch
(c) Alexander Fleming (d) Edward Jenner

70. Polycot is obtained by mixing
(a) nylon and wool (b) polyester and wool
(c) nylon and cotton (d) polyester and cotton

71. Aqueous solution of which of the following oxides turns blue litmus red?
(a) Sulphur dioxide (b) Magnesium oxide
(c) Iron oxide (d) Copper oxide

72. Which one of the following is used for making crackers?
(a) Copper (b) Sulphur (c) Iron (d) Chlorine

73. Naphthalene balls are obtained from
(a) petroleum (b) paraffin wax
(c) coal tar (d) coal gas

74. Coal is formed from the remains of
(a) vegetation only
(b) both egetation and animals
(c) animals only
(d) None of the above

75. When coal burns in air …… gas is mainly produced.
(a) SO_2 (b) NO_2 (c) CO (d) CO_2

76. The process of separating the various constituents of petroleum is known as
(a) carponisation (b) refining
(c) distillation (d) purification

77. Which of the following is an exhaustible natural resource?
(a) Oxygen (b) Air
(c) Sunlight (d) Forests

78. ..... is meant for the conservation of biodiversity in their natural habitat.
(a) Wildlife sanctuary (b) Zoological garden
(c) Botanical garden (d) Dams

79. Clearning of large patches of forests for cultivation of crops may lead to
(a) soil erosion (b) soil pollution
(c) soil conservation (d) soil fertility

80. Which of the following is found in an animal cell but not in plant cell?
(a) Cell wall (b) Mitochondria
(c) Cell membrance (d) Nucleus

81. Chromosomes are present in
(a) nucleolus (b) nucleus
(c) ribosome (d) mitochondria

82. Which one of the following is oviparous?
(a) Human being (b) Dog
(c) Cow (d) Hen

83. Two cells that fuse to give zygote are called
(a) gametes (b) embryo
(c) foetus (d) ovum

84. ..... should be present in the water for metamorphosis of tadpoles.
(a) Chlorine (b) Carbon (c) Sulphur (d) Iodine

85. Deficiency of thyroxin in the body causes
(a) salt imbalance (b) diabetes
(c) goitre (d) dwarfism

86. While walking on the ground we apply force on
(a) shoes (b) ground
(c) gravitational (d) friction

87. In preparing a chapatti from dough ..... force is applied.
(a) Muscular (b) Friction
(c) Gravitation (d) Magnetic

88. Mobil oil is applied on iron shutters to..... friction.
(a) increase (b) decrease
(c) remove (d) keep same

89. The surface of mortar and pestle (silbatta) used for grinding is etched again after long use to ..... friction.
(a) keep same (b) remove
(c) increase (d) decrease

90. To increase loudness of sound ..... of vibration of sound.
(a) decrease its frequency
(b) increase its frequency
(c) decrease its amplitude
(d) increase its amplitude

91. If we listen to the sound of lightening 10, after observing, it how far are we from the place where lightening occurs?
(Take, speed of sound = 330 m/s)
(a) 825 m (b) 1650 m
(c) 3300 m (d) 330 m

92. Electric current can produce ..... effect.
(a) only thermal and chemical
(b) only thermal and magnetic
(c) only magnetic and chemical
(d) all the three types of

93. In which of the following solution conduction of electricity will not take place?
(a) Tap water (b) Vegetable oil
(c) Vinegar (d) Lemon juice

94. The movement of the earth's plates can cause
(a) tsunami (b) cyclones
(c) earthquakes (d) thunderstorms

95. The outermost layer of earth is called
(a) inner core (b) crust
(c) mantle (d) outer core

96. The planet venus appears in the ..... sky before sunrise.
(a) Eastern (b) Western
(c) Northern (d) Southern

97. Hari saw full moon on a particular day. After ..... days he will be able to see full moon again.
(a) 15 (b) 20
(c) 29 (d) 30

98. Which of the following is a greenhouse gas?
(a) Nitrogen (b) Oxygen
(c) Chlorine (d) Water vapour

99. The ocasion of tree plantation in July/Ausgust is called
(a) Forest Conservation Day
(b) Van Mahostav
(c) Wildlife Mahotsav
(d) Plantation Month

100. The acid rain contains ..... in more quantity.
(a) SO_2 (b) CO
(c) CO_2 (d) H_2S

Answers

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

Hints and Solutions

30. (d) Wonderful feeling refers to 'mountaineering'.

31. (a) Zero (0) is additive identity for rational numbers because no change is obtained when adding zero (0) to any other rational number.

32. (d) $\because$ Multiplicative inverse of any number
= reciprocal of itself
Hence, Multiplicative inverse of $\frac{0}{1} = \frac{1}{0/1} = \frac{1}{0}$
$= \infty$ (undefined)

33. (c) Except 57, all other given numbers contain an even number at their unit's place and we know that the square of an even number is always an even number and the square of an odd number is always an odd number. Therefore, on squaring 57 we will get an odd digit at its unit's place.

34. (b) $\therefore$ Required total number of natural numbers
$= [(53)^2 - (52)^2] - 1$
$= [(53-52)(53+52)] - 1$
$[\because a^2 - b^2 = (a+b)(a-b)]$
$= [1 \times 105] - 1$
$= 104$

35. (c) $\therefore$ Unit digit in cube of 143 = unit digit of $(143)^3$
= Unit digit of $(3)^3$
= Unit digit of 27
= 7

36. (d) Cube of $11 = (11)^3 = 11 \times 11 \times 11 = 1331$
Hence, 1331 is a perfect cube.

37. (a) $\sqrt[3]{0.000125} = x$

$\Rightarrow \quad \sqrt[3]{\frac{125}{1000000}} = x$

$\Rightarrow \quad \sqrt[3]{\frac{5\times5\times5}{100\times100\times100}} = x \Rightarrow \frac{5}{100} = x$

$\therefore \quad x = 0.05$

38. (b) The correct pattern of numbers is as follows

$$\underset{\downarrow}{27} \;,\; \underset{\downarrow}{64} \;,\; \underset{\downarrow}{125} \;,\; \underset{\downarrow}{y} \;,$$
$$(3)^3 \quad (4)^3 \quad (5)^3 \quad (6)^3$$
$$\quad +1 \quad +1 \quad +1$$

Hence, $y = (6)^3 = 216$

39. (c) $\therefore$ Standard form of 0.0000040
$= \frac{4.0}{10^6} = 4.0 \times 10^{-6} \quad \left[\because \frac{1}{a^m} = a^{-m}\right]$

40. (a) $\therefore \frac{\left(\frac{3}{4}\right)^5}{\left(\frac{5}{3}\right)^5} = \left(\frac{\frac{3}{4}}{\frac{5}{3}}\right)^5 \qquad \left[\because \frac{a^m}{b^m} = \left(\frac{a}{b}\right)^m\right]$

41. (c) Cost price of toy = ₹1320

$\therefore \quad \frac{\text{Actual Price} \times (100 + \text{GST\%})}{100} = \text{Cost Price}$

$\Rightarrow \quad \frac{\text{Actual Price} \times (100 + 5 + 5)}{100} = 1320$

$\Rightarrow \quad \text{Actual Price} \times \frac{110}{100} = 1320$

$\therefore$ Actual Price (without GST)
$= \frac{1320 \times 100}{110} = ₹\,1200$

42. (d) CP of pen set for first shopkeeper = ₹ 112

SP of pen set for first shopkeeper

$$= \text{CP} \times \frac{(100 + \text{Profit \%})}{100}$$

$$= 112 \times \frac{(100 + 20)}{100}$$

$$= \frac{112 \times 120}{100} = ₹ 134.40$$

CP of pen set for second shopkeeper = ₹ 134.40

SP of pen set for second shopkeeper

$$= \frac{\text{CP} \times (100 - \text{Loss\%})}{100}$$

$$= 134.40 \times \frac{(100 - 20)}{100}$$

$$= 134.40 \times \frac{80}{100} = ₹ 107.52$$

∵ Initial CP > Last SP, then definitely loss occurred.

$$\therefore \text{Loss percentage} = \frac{\text{Loss}}{\text{CP}} \times 100$$

$$= \frac{112 - 107.52}{112} \times 100$$

$$= \frac{4.48 \times 100}{112} = 4\%$$

43. (c) Given, principal = ₹ 50000, Rate = 4%, Time = 2yrs

∴ Required difference

= Compound interest − Simple interest

$$= \text{Principal}\left(1 + \frac{\text{Rate}}{100}\right)^{\text{Time}} - \text{Principal} - \frac{\text{Principal} \times \text{Rate} \times \text{Time}}{100}$$

$$= 50000\left[\left(1 + \frac{4}{100}\right)^2 - 1 - \frac{4 \times 2}{100}\right]$$

$$= 50000\left[\left(\frac{26}{25}\right)^2 - 1 - \frac{2}{25}\right]$$

$$= 50000\left[\frac{676}{625} - 1 - \frac{2}{25}\right]$$

$$= 50000\left[\frac{676 - 625 - 50}{625}\right] = \frac{50000}{625} = ₹ 80$$

Alternate Method : Principal = ₹ 50000,

Rate = 4% , Time = 2 yr

∴ Required difference

$$= \text{Principal}\left(\frac{\text{Rate}}{100}\right)^{\text{Time}} = 50000\left(\frac{4}{100}\right)^2$$

$$= 50000 \times \left(\frac{1}{25}\right)^2 = 50000 \times \frac{1}{625}$$

$$= ₹ 80$$

44. (b) We know that, $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$

If distance is constant, then

$$\text{Speed} \propto \frac{1}{\text{Time}}$$

Hence, speed and time taken vary inversely with each other.

45. (c) Let the distance = x,

Then, $\text{speed} = \frac{\text{Distance}}{\text{Time}}$

$$12 = \frac{x}{\frac{20}{60}} \qquad \left[\because 1\,\text{min} = \frac{1}{60}\,\text{h}\right]$$

$$\therefore \quad x = \frac{12}{3} = 4\,\text{km}$$

Again, new speed $= \frac{4}{\frac{20-8}{60}} = \frac{4 \times 60}{12} = 20\,\text{km/h}$

46. (d) By $(a - b)^2 = a^2 - 2ab + b^2$

$$\therefore \quad (z - x)^2 = z^2 - 2zx + x^2$$

Hence, option (d) is an identity.

47. (a) $(121x^2 - 169y^2) = (11x)^2 - (13y)^2$

$$= (11x + 13y)(11x - 13y)$$

$$[\because a^2 - b^2 = (a + b)(a - b)]$$

Hence, irreducible factorisation of $= (121x^2 - 169y^2)$

$$= (11x + 13y)(11x - 13y)$$

48. (d) $(999)^2 - (995)^2 = (999 + 995)(999 - 995)$

$$[\because a^2 - b^2 = (a + b)(a - b)]$$

$$= (1994)(4) = 7976$$

49. (c) $-3x^2y^2 + x^2y^2 - 2x^2y^2 = -2x^2y^2 - 2x^2y^2$

$$= -4x^2y^2$$

50. (d) Given, area of rectangle $= 5(y + 3)(y^2 - 16)$

One side of rectangle $= 5(y^{-2} - y - 12)$

∵ Area of rectangle = One side (length) × second side (breadth)

$5(y + 3)(y^2 - 16) = 5(y^2 - y - 12) \times$ second side (breadth)

∴ Second side (breadth)

$$= \frac{y + 3[(y)^2 - (4)^2]}{y - 4y\ 3y - 12}$$

$$= \frac{(y + 3)(y - 4)(y + 4)}{y(y\ 4) + 3(y - 4)}$$

$$= \frac{(y + 3)(y + 4)(y - 4)}{(y - 4)(y + 3)}$$

$$= y + 4$$

51. (a) Let the number = x
Accoding to the question,
$3x + 21 = 99$
$\Rightarrow \quad 3x = 78$
$\therefore \quad x = 26$

52. (c) Let the five consecutive odd numbers $x, x+2, x+4, x+6$ and $x+8$.
Accoding to the question,
$x + x + 2 + x + 4 + x + 6 + x + 8 = 295$
$\Rightarrow \quad 5x + 20 = 295$
$\Rightarrow \quad 5x = 275$
$\therefore \quad x = 55$
Hence, smallest odd number is 55.

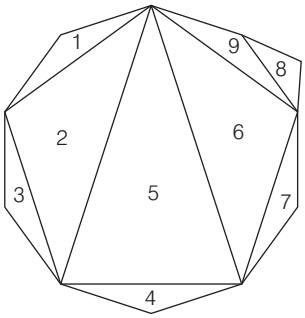
53. (a) Let age of son = x
Then, age of father = $5x - 3$
According to the question,
$5x - 3 + 5 = 3(x + 5) + 3$
$\Rightarrow \quad 5x + 2 = 3x + 15 + 3$
$\Rightarrow \quad 2x = 16$
$\therefore \quad x = 8$
Hence, age of son = 8 yr

54. (d) Let tenth digit of a number = x
Then, unit digit of a number = $2x$
$\because$ Number $= 10 \times x + 2x = 12x$
According to the question,
$20x + x - 12x = 18$
$\Rightarrow \quad 21x - 12x = 18$
$\Rightarrow \quad 9x = 18$
$\therefore \quad x = 2$
Hence, original number $= 12 \times 2 = 24$

55. (b) $\because$ Each interior angle of a polygon
$$= \frac{2(n-2) \times 90^\circ}{n}$$
$$108^\circ = \frac{2(n-2) \times 90^\circ}{n}$$
$\Rightarrow \quad 108^\circ n = 180^\circ n - 360^\circ$
$\Rightarrow \quad 72n = 360^\circ$
$\therefore \quad n = 5$
Hence, total sides of a polygon = 5

56. (c) Let the angles of quadrilateral be $x, 2x, 3x$ and $4x$.
According to the question,
Sum of all angles of quadrilateral = 360°
$x + 2x + 3x + 4x = 360^\circ$
$\Rightarrow \quad 10x = 360^\circ$
$\therefore \quad x = 36^\circ$
Hence, largest angle of quadrilateral $= 4 \times 36^\circ$
$= 144^\circ$

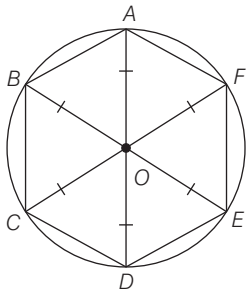
57. (d) According to the question,



Hence, total number of triangle = 9

58. (a) Given, side of cube = 5 cm
$\therefore$ Surface area of cube $= 6 \times (\text{side})^2 = 6 \times (5)^2$
$= 6 \times 25 = 150\ \text{cm}^2$

59. (c) According to the question,



$\because OA = OB = OC = OD = OE = OF = 6$ cm (radius)
$\therefore$ All ltriangles formed in regular hexagon is 'Equilateral Triangle'.
$\angle AOB = \angle AOF = \angle FOE = \angle EOD$
$$= \angle DOC = \angle COB = \frac{360^\circ}{6} = 60^\circ$$
$\therefore AB = BC = CD = DE = EF = FA = 6$ cm
Hence, Perimeter of hexagon = $6 \times$ side
$= 6 \times 6 = 36$ cm

60. (b) Original radius of cylinder (r_1) = 4 cm
New radius of cylinder (r_2) = 16 cm
Original height of cylinder (h_1) = 4 cm
New height of cylinder = h_2
According to the question,
Original curved surface area = After increment curved surface area
$2\pi r_1 h_1 = 2\pi r_2 h_2$
$\Rightarrow \quad 4 \times 4 = 16 \times h_2$
$\therefore \quad h_2 = \frac{16}{16} = 1$ cm

61. (b) Given,
Height of cylinder = side of cube = 4 cm
and radius of cylinder $= \frac{\text{Side of cube}}{2} = 2\,\text{cm}$
Hence, volume of cylinder $= \pi r^2 h$
$= \pi \times (2)^2 \times 4$
$= 16\pi\ \text{cm}^3$

62. (d) $\therefore$ Volume of cube $= (\text{side})^3$
$= (5y)^3 = 5y \times 5y \times 5y$
$= 125y^3$

63. (a) $\therefore$ Required number of boxes
$= \frac{\text{volume of godown}}{\text{volume of each box}}$
[$\because$ Volume of cuboid = length $\times$ breadth $\times$ height]
$= \frac{20 \times 25 \times 10}{2 \times 1.25 \times 1} = 2000$

64. (c) Total numbers shown on dice $n(S)$
$= 6\,(1, 2, 3, 4, 5, 6)$
Total odd numbers $n(E) = 3\,(1, 3, 5)$
$\therefore$ Required possibility $= \frac{n(E)}{n(S)} = \frac{3}{6} = \frac{1}{2}$

65. (b) According to question

First Class Interval	Second Class Interval	Third Class Interval	Fourth Class Interval	Fifth Class Interval
5-10	10-15	15-20	20-25	25-30

66. (b) Low temperature is not an essential condition to grow maize. It is a kharif (summer) crop, so, it needs high temperature (above 30°C) for its growth and seed setting.

67. (a) Hoe is used by the farmer to remove weeds from the field. It is an ancient and versatile agricultural and horticultural hand tool used to shape soil, remove weeds, etc.

68. (a) Pathogenic microorganisms present in the host cells are killed by antibiotics. Antibiotics are substances that inhibits the growth of or destroys microorganisms.

69. (c) Penicillin was discovered by Alexander Fleming in 1928. Now, over 7000 antibiotics are known so far which are used to cure many human diseases caused by microorganisms.

70. (d) Polycot is made by combing (mixing) cotton and polyester. It is used to prepare clothes such as traffic jackets, etc.

71. (a) Sulphur is a non-metal and it forms an acidic oxide, i.e. sulphur dioxide (SO_2) whose aqueous solution which turns blue litmus red.

72. (a) Copper is used for making crackers.

73. (c) Naphthalene ball is an aromatic hydrocarbon which is obtained from coal tar while aliphatic are obtained from petroleum such as paraffin wax, etc.

74. (b) Coal is formed from the remains of both vegetation and animals because when these plants and animals died.Due to the high temperature, high pressure and absence of oxygen, they are converted into coal.

75. (d) When coal burns in presence of air CO_2 (carbon dioxide) gas is mainly produced.

$$\underset{\text{(Coal)}}{C} + \underset{\text{(Oxygen)}}{O_2} \longrightarrow \underset{\text{(Carbon dioxide)}}{CO_2} + \text{Heat}$$

76. (b) Petroleum is a mixture of various constituents like petroleum gas, petrol, diesel, lubricating oil, paraffin wax, etc. The process of separating various constituents of petroleum is known as refining.

77. (d) Forest is an exhaustible (non-renewable), natural resource but oxygen, air and sunlight are renewable natural resources.

78. (a) Wildlife sanctuaries are meant for the conservation of biodiversity in their natural habitat. In these places, animals and plants are protected in their natural; habitat and activities like hunting, poaching, felling trees are strictly prohibited.

79. (a) Clearing of land patches of forests for cultivation of crops may lead to soil erosion. It is a process of removal of top fertile soil by various factors like wind, water, etc.

80. (*) The question is not correct. If we read plant cell in place of animal cell then answer would be (a). Plant cell have cell wall which is not found in animal cell.

81. (b) Chromosomes are present in nucleus. These are condensed form of DNA packed with histone proteins. There are specific number of chromosome for every species of organisms. For example, there are 23 pairs of chromosomes in every cell of human body.

82. (d) Hen is oviparous animal. It lays eggs. Cow, dogs and human beings are viviparous animals which give birth to young ones.

83. (a) Two cells that fuse to give zygote are called gametes. These are formed in sexually reproducing

organisms in male and female individuals. Males produce sperms and females produce ova or egg cell in their respective reproductive systems.

84. (d) Iodine should be present in the water for metamorphosis of tadpoles. It is essential for the production of thyroxine hormones by tadpoles which brings about metamorphosis in them.

85. (c) Deficiency of thyroxin in human body causes a disease called goitre. In this, the neck area (where thyroid gland is present) swells because of malfunctioning of thyroid gland due to iodine deficiency.

86. (b) According to Newton's third law, every action has an equal and opposite reaction. This is relevant to walking because when you put your foot on the ground, you are applying a force to it. In doing this. the ground also actually applies an equal force onto your foot, in the opposite direction, pushing you forward.

87. (a) Muscular force is applied to change the shape of a ball of dough to a chapatti. This force leads to the change in shape and size of chapatti.

88. (b) Mobil oil is applied on iron shutters to decrease the friction. After the applying of mobil oil, the shutter become very smooth and we could easily de-shutter it by applying less effort.

89. (c) After prolonged use, the mortar and pestle (silbatta) loose the roughness due to which frictional force reduces and it does not work. So, we have to make it rough again for increase friction.

90. (d) To increase loudness of sound, increase its amplitude of vibration of sound because loudness of sound is depend on amplitude of vibration of sound.

91. (c) Given, speed of sound = 330 m/s
and time, $t = 10$ s

We know that, speed $= \frac{\text{distance}}{\text{time}}$

$\therefore$ distance = speed $\times$ time

So, distance travelled by sound in 10s.

$= 330 \times 10 = 3300$ m

92. (d) Electric current can produce thermal, chemical and magnetic effect. It depends on that medium on which it flowing through.

93. (b) The solution of vegetable oil does not conduct the electricity because it is a bad conductor of electricity there is no free electron in its structure. Tap water, vinegar and lemon juice are good conductors of electricity and free electrons are presented in their structure so they can conduct the electricity.

94. (c) The movement of the earth's plates can cause earthquakes. These plates are also called tectonic plates. When tectonic plates collide, one rides over the other, causing earthquakes.

Tsunami occurs due to displacement of large volume of water, generally in ocean or a lake. Cyclones is caused by a combination of strong winds driving water on shore and the lower atmosphere pressure thunderstorm occurs during rainfall.

95. (b) The outermost layer of earth is called crust. It is composed of low density rocks. Inner core is the innermost layer of earth. Above the earth's core, earth's vantle layer lies. Earth's outer core lies above the earth's inner core and below the mantle.

96. (a) The planet venus appears in the eastern sky before sunrise.

97. (c) The time interval between a full moon and next repetition of full moon is 29 days.

98. (d) Water vapours are considered as greenhouse gases alongwith CH_4, CO_2, etc. These gases absorb solar radiation and are responsible for raising earth's temperature due to greenhouse effect.

99. (b) The occassion of tree plantation in July/August is called Van Mahotsav. It was started by Kulpati Kanaiyal Lal Munshi, Union Minister for agriculture for creating interest in masses for tree plantation and afforestations.

100. (a) The acid rain contains SO_2 in more quantity. It reacts with rain droplets and form sulphuric acid (H_2SO_4). When it falls on surface of earth, it damages plant and, animal life alongwith monuments.