JAWAHAR NAVODAYA VIDYALAYA

CLASS IX ENTRANCE EXAM

SOLVED PAPER 2021

Part I हिन्दी

निर्देश (प्रश्न 1 से 15 तक) *प्रत्येक प्रश्न के लिए चार सम्भावित उत्तर विकल्प दिए गए हैं, जिनमें से केवल एक सही है यही उत्तर चुनकर उसको ओ.एम.आर. उत्तर पत्रिका पर उपयुक्त स्थान पर दर्शाना है।*

1. जिस वाक्य में साधारण अथवा मिश्र वाक्यों का मेल रहता है, उस वाक्य को क्या कहते हैं?
   (a) संयुक्त वाक्य (b) विशेष वाक्य
   (c) मिश्र वाक्य (d) साधारण वाक्य
2. किस विकल्प में दोनों शब्द 'सूर्य' के पर्यायवाची हैं?
   (a) दिनकर, दिवाचर (b) दिनकर, दिवाकर
   (c) दिनचर, अशुमाली (d) भानु, दिनचर
3. शुद्ध रूप छाँटिए
   (a) आर्शीवाद (b) आशिर्वाद (c) आशीर्वाद (d) आर्शिवाद
4. 'शाश्वत' का विलोमार्थी शब्द कौन-सा है?
   (a) अमर (b) अनश्वर
   (c) नश्वर (d) ईश्वर
5. 'गंगा' शब्द ..... संज्ञा है।
   (a) व्यक्तिवाचक (b) भाववाचक
   (c) जातिवाचक (d) पदार्थवाचक
6. कोरोना संकट के दिनों में मास्क लगाकार बाहर निकलने का आग्रह करते हुए आप किस लोकोक्ति का प्रयोग करेंगे?
   (a) जान हथेली पर है (b) जान है तो जहान है
   (c) नाक का सवाल है (d) जान के लाले पड़ना
7. 'मात्रा या वजन' बताने वाले विशेषणों को क्या कहते हैं?
   (a) संख्यावाचक (b) गुणवाचक
   (c) सार्वनामिक (d) परिमाणवाचक
8. 'ढ' वर्ण का उच्चारण स्थान है
   (a) मूर्धन्य (b) दन्त्य (c) ओष्ठ्य (d) कण्ठ्य
9. 'घोड़ा' का बहुवचन है
   (a) घोड़ों (b) घोड़े
   (c) घोड़न (d) घोड़ा
10. महादेवन तो सदा स्वार्थ पूरा करना चाहता है। वाक्य के रेखांकित कथन के स्थान पर दिए हुए मुहावरों में से किसका प्रयोग ठीक रहेगा?
    (a) अपना उल्लू सीधा करना (b) दोनों हाथों में लड्डू होना
    (c) पाँचों अँगुलियाँ घी में (d) तीन में न तेरह में

निर्देश (प्र. सं. 11-15) *निम्नलिखित अनुच्छेद को पढ़कर नीचे दिए गए प्रश्नों के सर्वाधिक उपयुक्त उत्तर चुनिए।*

जब कोई रोग बहुत ही कम समय में किसी व्यापक क्षेत्र में फैलकर बहुत-सी मौतों का कारण बन जाता है तो उसे महामारी कहा जाता है। अचानक ही फैल जाने के कारण इसके निदान, चिकित्सा आदि के बारे में पर्याप्त जानकारी नहीं होती, इसलिए नियन्त्रण में कठिनाई आती है। आजकल कोविड-19 नामक रोग ऐसी महामारी बन चुका है, जो सारे विश्व में फैल गया है।

अपने देश में इससे पहले भी प्लेग, हैजा, फ्लू, चेचक जैसे रोग महामारी के रूप में फैले, किन्तु उनका फैलाव इतना नहीं था और उन पर नियन्त्रण पा लिया गया। कोविड-19 के लिए टीका और दवाओं के परीक्षण हो रहे हैं। आशा है कि शीघ्र ही वे उपलब्ध हो सकेंगे। तब तक हमें अपनी रक्षा के लिए स्वयं सावधानियाँ बरतनी होंगी।

11. लेखक महामारी कोविड-19 पर नियन्त्रण पा लेने के बारे में आशावान है, क्योंकि
    (a) कोई रोग अधिक दिन तक नहीं टिकता।
    (b) वह टीके और दवाओं के शोध से जुड़ा है।
    (c) टीके और दवाओं पर परीक्षण हो रहे हैं।
    (d) लोग स्वयं स्वच्छता बरत रहे हैं।

12. 'विस्तार' के लिए अनुच्छेद में प्रयुक्त शब्द है
(a) असीमित (b) फैलाव (c) उपलब्ध (d) पर्याप्त

13. किस शब्द का निर्माण किसी उपसर्ग से नहीं हुआ है?
(a) परीक्षण (b) फैलाव (c) नियन्त्रण (d) निदान

14. महामारी उस रोग को कहा जाता है, जो
(a) महान लोगों को मारे
(b) वृद्धों की मौत का कारण बने
(c) अचानक व्यापक क्षेत्र में फैलकर मौतों का कारण बने
(d) डॉक्टरों को समझ में न आए

15. भारत में यह महामारी कभी नहीं फैली
(a) प्लेग (b) हैजा
(c) चेचक (d) निमोनिया

Part II English

Directions (Q. Nos. 16-19) *Answer by choosing the most appropriate options to complete the paragraph by filling in the blanks.*

The Dodo bird was last seen in 1660 .....(16) which it was never to be seen. There are different stories about the extinction of this species. Some people say that the Dutch sailors first .....(17) the Dodo bird and mercilessly killed it to eat its meat .....(18) others say that the rats and other animals (19)..... came on board the Dutch ships spread themselves across the island and ate up the Dodo eggs for food.

16. (a) soon (b) after (c) later (d) before

17. (a) see (b) seen (c) saw (d) seeing

18. (a) but (b) and (c) as (d) because

19. (a) who (b) when (c) while (d) which

20. Read the sentence given below and choose the option which correctly changes it into Passive voice.
Can Anil lose his book?
(a) His book can be lost by Anil.
(b) Can his book be lost by Anil?
(c) Could his book be lost by Anil?
(d) His book could be lost by Anil.

21. The word which is opposite in meaning to 'suspicious' is ..... .
(a) wary (b) doubtful (c) incredible (d) gullible

22. Choose the word similar in meaning to the underlined words.
At first they lopped off all the branches.
(a) cut (b) caught (c) extended (d) grew

Directions (Q. Nos. 23-25) *Answer these questions by choosing the most appropriate options to fill in the blanks.*

23. On our way back home we stopped at the mini mart to pick up ..... fruit.
(a) a little (b) a few (c) some (d) much

24. Mumbai and Delhi are two of the ..... airports in India.
(a) busier (b) busiest (c) busy (d) more busy

25. Till today, neither of the two brothers ..... this race.
(a) have run (b) has run
(c) will run (d) would run

26. Give one word substitute for the following expression.
'One who cannot be defeated'
(a) Invincible (b) Undefeated
(c) Patient (d) Determined

Direction (Q. No. 27) *Select the alternative which best expresses the following sentence in Indirect speech.*

27. Surbhi said to Anu, "My mother is not well so I won't be able to come for the dance practice today".
(a) Surbhi told Anu that her mother was not well so she would not be able to go for dance practice that day.
(b) Surbhi told to Anu her mother was not well so she will not be able to come for dance practice the next day.
(c) Surbhi says to Anu that her mother is not well so she will not be able to go for dance practice that day.
(d) Surbhi said to Anu that my mother is not well so she will not be able to come for dance practice today.

Directions (Q. Nos. 28-30) *Read the following passage carefully and answer the questions that follow.*

It was the height of summer and the school, Anil was to join had not yet opened. Having as yet made no friends in Dehradun in the foothills, he wandered about a good deal by himself into the hills and forests that stretched away on all sides of the town.

28. What was Anil doing in summer?
(a) Studying (b) Wandering
(c) Travelling (d) Shopping

29. Anil had come to Dehradun to join a
(a) club (b) job
(c) school (d) college

30. Dehradun is situated near the
(a) hills (b) rivers
(c) sea (d) plateau

Part III Mathematics

Directions (Q. Nos. 31-65) *For each question, four possible answer choices have been given, out of which only one is correct. Select the correct answer and indicate it at the appropriate place in the OMR Answer Sheet.*

31. 25450 expressed in standard form is
(a) 2.545×10^{-4} (b) 2545×10^{1}
(c) 25.45×10^{2} (d) 2.545×10^{4}

32. In 15 days, the Earth picks up 1.2×10^{8} kg of dust from the atmosphere. In how many days will it pick up 4.8×10^{8} kg of dust?
(a) 40 (b) 50
(c) 60 (d) 100

33. The cube of a number x is nine time. The value of x (where $x\neq0$ and $x\neq-3$)
(a) 8 (b) 4
(c) 3 (d) 2

34. The value of $[(5^{-1}-6^{-1})^{-1}-(3^{-1}-4^{-1})^{-1}]$ is
(a) 12 (b) 18 (c) 24 (d) 30

35. A camp having 80 inmates, have food sufficient for 70 days. How many in mater should leave after 10 days so the remaining food lasts another 80 days?
(a) 25 (b) 24 (c) 20 (d) 16

36. If $x=\frac{2}{3}$ and $y=\frac{3}{2}$, then the value of $(x+y)\div(x-y)$ is
(a) $\frac{15}{2}$ (b) $-\frac{13}{5}$ (c) $\frac{17}{6}$ (d) $-\frac{11}{6}$

37. The sum of four consecutive multiples of 7 is 322. Find the smallest multiple involved.
(a) 91 (b) 84
(c) 63 (d) 70

38. Factorising $15xy(x-3y)-3y(x-3y)$ gives
(a) $3y(x-3y)(x-1)$
(b) $3y(x-3y)(5x-1)$
(c) $y(x-3y)(5x-3)$
(d) $3(x-3y)(5x-3)$

39. $(761)^2-(239)^2=?$
(a) 552 (b) 55200 (c) 522000 (d) 5220

40. 27 when added to twice a number x, and then increased by 13, gives us 60. The value of x is
(a) 20 (b) 15
(c) 10 (d) 5

41. When expanded, the expression $(a+2b-c)^2$ is equal to
(a) $a^2+4b^2+c^2-2ab-2bc-ac$
(b) $a^2+4b^2+c^2+4ab+4bc+2ac$
(c) $a^2+4b^2+c^2+4ab-4bc-2ac$
(d) $a^2+4b^2+c^2+4ab-4bc-4ac$

42. How many carpets of dimensions 3 m × 2m are required to cover the floor of a hall, whose dimensions are 30 m × 12 m?
(a) 30 (b) 60 (c) 90 (d) 125

43. A metallic cylindrical pipe has outer radius of 3 cm and an inner radius of 2 cm. If the length of the pipe is 70 cm, then the volume of metal in the pipe, in cm^3, is
(a) 350π (b) 630π
(c) 280π (d) 910π

44. If the base and height of a triangle are both doubled, then the area will be ..... the original triangle.
(a) one-fourth (b) double
(c) four times (d) equal to

45. The radii of two cylindrical vessels are in the ratio of 1 : 3 and their heights are in the ratio of 1 : 2. The ratio of their volumes is
(a) 1 : 3 (b) 1 : 6
(c) 1 : 18 (d) 1 : 36

46. Out of the following rational numbers, which is the smallest?
(a) $\frac{2}{7}$ (b) $\frac{-5}{7}$
(c) $\frac{4}{-7}$ (d) $\frac{3}{7}$

47. Which of the following statements is true?
(a) Fractions are rational numbers but integers are not
(b) Both fractions and integers are rational numbers
(c) Neither fractions nor integers are rational numbers
(d) Integers are rational numbers but fractions are not

48. $\frac{21}{24}\times\frac{8}{7}$ is equal to
(a) 0 (b) 1 (c) 3 (d) $\frac{64}{49}$

49. Three is subtracted from a number (x). This difference when multiplied by 4, gives the product as 20. The equation is
(a) $3-4x=20$ (b) $4(3-x)=20$
(c) $4(x-3)=20$ (d) $x-(3\times4)=20$

50. In a quadrilateral, the sum of three angles is equal to twice the fourth angle. The measure of the fourth angle is
(a) 60° (b) 120°
(c) 90° (d) 160°

51. The solution of the linear equation $\frac{2x-3}{4} - \frac{2x-1}{2} = \frac{x-2}{3}$ is
(a) $x = \frac{1}{8}$ (b) $x = \frac{2}{3}$ (c) $x = \frac{1}{2}$ (d) $x = \frac{3}{4}$

52. In a quadrilateral $ABCD$, if $AB = 10$ cm $CD = 6$ cm and $\angle A + \angle D = 180°$, what type of quadrilateral is $ABCD$?
(a) Parallelogram (b) Trapezium
(c) Rhombus (d) Square

53. A die is rolled. The probability of getting a number greater than 1 and odd is
(a) $\frac{5}{6}$ (b) $\frac{1}{2}$
(c) $\frac{2}{3}$ (d) $\frac{1}{3}$

54. Out of 15 students participating in a debate, 5 are girls. The probability that the winner is a boy is
(a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{2}{3}$ (d) $\frac{3}{5}$

55. A survey of 300 people found that 30 of them play cricket. In a pie chart, what would be the sector angle of this group?
(a) 20° (b) 36°
(c) 30° (d) 10°

56. Two squares of area 16 cm^2 and 36 cm^2 are placed adjacent to each other to form a new shape. The perimeter of this shape is
(a) $2\sqrt{13}$ cm (b) 32 cm
(c) 40 cm (d) 52 cm

57. What must be added to 269 to make the result a perfect square?
(a) 13 (b) 20
(c) 55 (d) 44

58. Three metallic solid cubes of sides 6 cm, 8 cm and 10 cm are melted to form a single cube. The lengths of the edge of the new cube is
(a) 15 cm (b) 14 cm (c) 13 cm (d) 12 cm

59. The smallest number that should be added to or subtracted from the sum of squares of 9 and 10 to make it a perfect square is
(a) 1 (b) 15
(c) 5 (d) 12

60. $[\sqrt{(24)^2 + (7)^2}]^3$ is equal to
(a) 25 (b) 625
(c) 15625 (d) 125

61. If 5 men can do a piece of work in 28 days, then the number of persons required to do the same work in 7 days is
(a) 15 (b) 30
(c) 20 (d) 35

62. Manu buys a pressure cooker at $\left(\frac{9}{10}\right)$th of its marked selling price and sells it at 8% more than its marked selling price. What is her gain per cent?
(a) 10% (b) 20%
(c) 30% (d) 40%

63. Samir purchased a pair of shoes for ₹ 1344 including GST. If the sale price of the shoes is ₹1200, then the rate of GST is
(a) $10\frac{5}{7}\%$ (b) 18% (c) 6% (d) 12%

64. The population of a city first increased by 10% and then decreased by 20%. The net decrease in the population is
(a) 15% (b) 20%
(c) 12% (d) 8%

65. If a number is increased by 20% and then decreased by 20%, the net increase/decrease percentage will be
(a) No change (b) 4% increase
(c) 4% decrease (d) 9% decrease

Part IV General Science

Directions (Q. Nos. 66-100) *For each question, four possible answer choices have been given, out of which only one is correct. Select the correct answer.*

66. The property of metals by which they can be beaten into thin sheets is called
(a) ductility (b) brittleness
(c) malleability (d) conductivity

67. Which amongst the following is not a fossil fuel?
(a) Coke (b) Petrol (c) Wood (d) Diesel

68. Rayon is obtained from ..... .
(a) coal, water and oil (b) wood-pulp
(c) acrylic (d) animals

69. When a copper vessel is exposed to moist air for a long time, if acquires a dull green coating on its surface. The material of ths green coating is a mixture of
(a) copper oxide and copper sulphate
(b) copper carbonate and copper hydroxide
(c) copper oxide and copper carbonate
(d) copper hydroxide and copper sulphate

70. The most abundant non-metal found in the Earth's crust is
(a) carbon (b) hydrogen (c) nitrogen (d) oxygen

71. Dead plants slowly get converted to coal under ..... .
(a) low pressure and high temperature
(b) high pressure and low temperature
(c) high pressure and high temperature
(d) low pressure and low temperature

72. The process of fermentation was discovered by .....
(a) Alexander Fleming (b) Edward Jenner
(c) Louis Pasteur (d) Robert Koch

73. Which one is a non-metal which conducts electricity?
(a) Copper (b) Bromine (c) Graphite (d) Mercury

74. Which one of the following microorganisms is a protozoan?
(a) *Amoeba* (b) *Aspergillus*
(c) *Spirogyra* (d) *Penicillium*

75. Which one of the following does not add nutrient to the soil?
(a) Field fallow (b) Manures/Fertilisers
(c) Crop rotation (d) Ploughing

76. Which one of the following is a group of Kharif crops?
(a) Cotton, gram, wheat (b) Gram, maize, mustard
(c) Groundnut, pea, wheat (d) Cotton, maize, paddy

77. Select a group of bacterial diseases from the following.
(a) Chicken pox and Polio
(b) Tuberculosis and Typhoid
(c) Cough and Influenza (Flu)
(d) Dysentry and Malaria

78. Dolly, the sheep, was born on 5th July, 1996 and was the first mammal to be
(a) produced through *in vitro* fertilisation
(b) produced through internal fertilisation
(c) produced through external fertilisation
(d) produced through cloning

79. External fertilisation is very common in
(a) frogs, fish and rats (b) toads, fish and cats
(c) toads, frogs and starfish (d) hens, fish and starfish

80. Friction is increased by ..... .
(a) lubrication
(b) powder sprinkled on carrom board
(c) smoothening the surface
(d) treading of tyres

81. Which one of the following is correctly matched?
(a) Adrenaline – Growth hormone
(b) Insulin – Female hormone
(c) Oestrogen – Stress reliever hormone
(d) Testosterone – Male hormone

82. Which one is a contact force?
(a) Electrostatic force (b) Magnetic force
(c) Frictional force (d) Gravitational force

83. Which one is not a unit of pressure?
(a) Nm^{-2} (b) Pascal (c) Nm^{-1} (d) dyne cm^{-2}

84. If we completely burn the same amount of the following fuels, the maximum amount of heat will be obtained on buring
(a) Petrol
(b) Liquified Petroleum Gas (LPG)
(c) Diesel
(d) Compressed Natural Gas (CNG)

85. National parks protect whole sets of ecosystems, while wildlife sanctuaries provide protection to ..... .
(a) Fauna, flora and landscape
(b) Wild fauna and flora
(c) Wild animals
(d) Wild flora

86. Which component of the cell is called the powerhouse of the cell?
(a) Lysosome (b) Mitochondria
(c) Ribosome (d) Cell wall

87. Which of the following is a non-polluting fuel for vehicles?
(a) Petrol
(b) Diesel
(c) Kerosene
(d) Compressed Natural Gas (CNG)

88. Which one of the following is found in plant cells but not found in the animal cells?
(a) Cell wall
(b) Cell membrane
(c) Cytoplasm
(d) Nucleus

89. The power of which one of the following is expressed in terms of magnitude on a scale called the Richter Scale?
(a) Lightning (b) Cyclone
(c) Tsunami (d) Earthquake

90. Which one of the following air pollutants produced due to incomplete combustion of petrol and diesel reduces the oxygen carrying capacity of blood?
(a) Smoke (b) Carbon monoxide
(c) Carbon dioxide (d) Nitrogen oxide

91. Which two planets of our solar system rotate from East to West?
(a) Mercury and Neptune
(b) Venus and Uranus
(c) Mars and Uranus
(d) Venus and Neptune

92. Which of the following gases are responsible for acid rain ?
(a) $O_2(g)$ (b) $CO(g)$
(c) $CO_2(g)$ (d) $SO_2(g)$, $NO_2(g)$

93. In terms of increasing distance from Sun, the correct sequence of the first the inner planets of the solar system is
(a) Earth, Mercury, Venus (b) Venus, Mercury, Earth
(c) Mercury, Venus, Earth (d) Earth, Venus, Mercury

94. Images are formed by ..... .
(a) regular reflection (b) irregular reflection
(c) diffused reflection (d) reflection

95. Which of the following characteristics of sound depends on amplitude of vibration?
(a) Speed (b) Pitch
(c) Loudness (d) Quality

96. Through which of the following does electric current not flow?
(a) Solution of hydrochloric acid
(b) Copper wire
(c) Solid sodium chloride
(d) Molten sodium chloride

97. An electric current can produce
(a) heating effect only
(b) chemical effect only
(c) magnetic effect only
(d) heating, chemical and magnetic effects

98. A star is 20 light years from the Earth.How much time does it take for the light from the star to reach the Earth?
(a) 60 yrs (b) 20 yrs (c) $6\frac{2}{3}$ yrs (d) 15 yrs

99. If the angle between incident ray and reflected ray is 120°, what is the angle of incidence?
(a) 60° (b) 90° (c) 30° (d) 45°

100. The process of depositing a layer of any desired metal on another material by means of electricity is called
(a) electric coating (b) electroplating
(c) electric plating (d) metallic coating

Answers

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

Hints and Solutions

1. (a) जिस वाक्य में साधारण अथवा मिश्र वाक्यों का मेल संयोजक अवयवों द्वारा होता है, उसे **संयुक्त वाक्य** कहते हैं। जैसे-''उसने परिश्रम किया, किन्तु सफलता नहीं मिली''। यहाँ 'उसने बहुत परिश्रम किया' तथा 'सफलता नहीं मिली' दो साधारण वाक्य हैं, जो 'किन्तु' संयोजन अव्यय द्वारा जुड़े हुए हैं। अतः यह संयुक्त वाक्य का उदाहरण है।

2. (b) सूर्य के पर्यायवाची दिनकर, दिवाकर, अंशुमाली, भानु, सूरज, भास्कर, आक, आदित्य, दिनेश, मार्तण्ड, रवि तथा प्रभाकर आदि हैं।

3. (c) दिए गए विकल्पों में 'आशीर्वाद' शुद्ध वर्तनी वाला शब्द है, जबकि अन्य तीनों उसके अशुद्ध रूप हैं।

4. (c) शाश्वत का विलोम शब्द नश्वर होता है। शाश्वत का अर्थ है–हमेशा बने रहने वाला तथा नश्वर का अर्थ है–नष्ट होने वाला। इस प्रकार ये दोनों शब्द एक-दूसरे के विलोम हैं।
अन्य विकल्पों के विलोम शब्द हैं

अमर	–	मर
अनश्वर	–	नश्वर
ईश्वर	–	अनीश्वर

5. (a) जो शब्द किसी व्यक्ति, स्थान या वस्तु का बोध कराते हैं, **व्यक्तिवाचक** संज्ञा कहलाते हैं; जैसे-'गंगा', 'पटना', दिल्ली, महात्मा गाँधी आदि।

6. (b) कोरोना संकट के दिनों में मास्क लगाकर बाहर निकलने का आग्रह करते हुए 'जान है तो जहान है' लोकोक्ति का प्रयोग किया जाएगा। 'जान है तो जहान है' लोकोक्ति का अर्थ-'जीवन है तो सब कुछ है' होता है।

7. (d) जिन विशेषणों से संज्ञा या सर्वनाम के परिमाण यानी मात्रा या वजन का बोध होता है, उन्हें परिमाणवाचक विशेषण कहते हैं। परिमाणवाचक विशेषण दो प्रकार के होते हैं-
(i) **निश्चित परिमाणवाचक** दस किलो चावल, पाँच किलो दाल
(ii) **अनिश्चित परिमाणवाचक** थोड़ा दूध, बहुत घी आदि।

8. (a) 'ढ' वर्ण का उच्चारण स्थान **मूर्धन्य** है। कठोर तालु का मध्य भाग मूर्धा कहलाता है। जब जिह्वा की उल्टी हुई नोंक का निचला भाग मूर्धा को स्पर्श करता है, तो ऐसी स्थिति में उत्पन्न होने वाली ध्वनि को मूर्धन्य व्यंजन कहते हैं; जैसे-ट, ठ, ड, ढ, ण मूर्धन्य व्यंजन हैं।

9. (b) 'घोड़ा' एकवचन शब्द है इसका बहुवचन रूप 'घोड़े' होगा।

10. (a) 'अपना उल्लू सीधा करना' मुहावरे का अर्थ है–अपना स्वार्थ पूरा करना। दिए गए वाक्य महादेवन तो सदा स्वार्थ पूरा करना चाहता है। वाक्य में रेखांकित पंक्ति के स्थान पर 'अपना उल्लू सीधा करना' चाहता है मुहावरे का प्रयोग किया जा सकता है।

11. (c) लेखक महामारी कोविड-19 पर नियन्त्रण पा लेने के बारे में आशावान है, क्योंकि टीके और दवाओं पर परीक्षण हो रहे हैं, जिससे इस महामारी पर नियन्त्रण पाया जा सकता है।

12. (b) दिए गए विकल्पों में 'विस्तार' के लिए अनुच्छेद में प्रयुक्त शब्द **फैलाव** है। विस्तार के अन्य पर्यायवाची शब्द विशालता, वृद्धि, प्रसार आदि हैं।

13. (b) दिए गए शब्दों में से **फैलाव** शब्द में उपसर्ग नहीं है क्योंकि फैलाव में 'फैल' मूल शब्द तथा 'आव' प्रत्यय है। अन्य तीनों विकल्पों में उपसर्ग का प्रयोग हुआ है।
परीक्षण – 'परि' उपसर्ग, 'क्षण' मूल शब्द
नियन्त्रण – 'निः' उपसर्ग
निदान – 'नि' उपसर्ग, 'दान' मूल शब्द

14. (c) अनुच्छेद के अनुसार महामारी उस रोग को कहा जाता है, जो अचानक व्यापक क्षेत्र में फैलकर मौतों का कारण बने।

15. (d) भारत में प्लेग, हैजा, फ्लू, चेचक जैसी महामारियाँ फैली हैं, किन्तु 'निमोनिया' महामारी कभी नहीं फैली है।

16. (b) The word 'after' makes the sentence grammatically correct and contextually meaningful.

17. (c) As the given sentence is in past tense, the word 'saw' will be the correct filler.

18. (b) The word 'and' makes the sentence grammatically correct and contextually meaningful.

19. (a) As the word to be filled in the given blank refers to living beings (rats and other animals), the word 'who' is the correct filler.

20. (b) The correct passive voice of the given sentence is given by option (b).

21. (d) The word 'suspicious' means 'having or showing a cautious distrust of someone or something.' From the given options, Gullible

meaning 'easily persuaded to believe something; credulous' is its correct opposite.

22. (a) The phrase 'lopped off' means to cut something off or away, especially quickly, indelicately or without finesse.

23. (c) The word 'some' makes the sentence grammatically correct and contextually meaningful.

24. (b) Article 'the' is used with superlative form of adjective. Hence, busiest is the correct filler.

25. (a) The correct option that has to be filled in the given blank is "have run" as two people are mentioned in the sentence.

27. (a) The correct indirect speech of the given sentence is given by option (a).

31. (d) Standard form of $25450 = 25450 \times 10^4$

32. (c) 1.2×10^8 kg dust picked up in = 15 days

1 kg dust picked up in $= \frac{15}{1.2 \times 10^8}$ days

4.8×10^8 kg dust will be picked up in

$$= \frac{15}{1.2 \times 10^8} \times 4.8 \times 10^8 = 60 \text{ days}$$

33. (c) According to the question,

$$x^3 = 9x$$

$$\Rightarrow \quad x^3 - 9x = 0$$

$$\Rightarrow \quad x(x^2 - 9) = 0 \Rightarrow x(x+3)(x-3) = 0$$

$$\therefore \quad x = 0, -3, 3$$

$$\because \quad x \neq 0 \text{ and } x \neq -3, \text{ then } x = 3$$

Hence, the value of x is 3.

34. (b) $[(5^{-1} - 6^{-1})^{-1} - (3^{-1} - 4^{-1})^{-1}]$

$$\Rightarrow \left[\left(\frac{1}{5} - \frac{1}{6}\right)^{-1} - \left(\frac{1}{3} - \frac{1}{4}\right)^{-1}\right] \quad \left[\because a^{-m} = \frac{1}{a^m}\right]$$

$$= \left[\left(\frac{1}{30}\right)^{-1} - \left(\frac{1}{12}\right)^{-1}\right] = 30 - 12 = 18$$

35. (c) 80 inmates are eaten in 70 days = 1 unit

80 inmates are eaten in 10 days $= \frac{1}{70} \times 10$ units

$$= \frac{1}{7} \text{ units}$$

Remaining food $= 1 - \frac{1}{7} = \frac{6}{7}$ units

1 unit food is eaten in 70 days = 80 inmates

$\frac{6}{7}$ units food is eaten in 80 days $= \frac{80 \times 70}{80} \times \frac{6}{7}$

$$= 60 \text{ inmates}$$

$\therefore$ Inmates to go leave = 80 − 60 = 20 inmates

36. (b) $x = \frac{2}{3}, y = \frac{3}{2}$

$$x + y = \frac{2}{3} + \frac{3}{2} = \frac{4+9}{6} = \frac{13}{6}$$

$$x - y = \frac{2}{3} - \frac{3}{2} = \frac{4-9}{6} = -\frac{5}{6}$$

$$(x + y) \div (x - y) = \frac{13}{6} \div -\frac{5}{6}$$

$$= \frac{13}{6} \times -\frac{6}{5} = -\frac{13}{5}$$

37. (d) Let the four consecutive multiples of 7 are $7x$, $7(x+1)$, $7(x+2)$ and $7(x+3)$

According to the question,

$$7x + 7(x+1) + 7(x+2) + 7(x+3) = 322$$

$$\therefore \quad 28x + 42 = 322$$

$$\Rightarrow \quad 28x = 322 - 42$$

$$\Rightarrow \quad x = \frac{280}{28} = 10$$

Hence, the smallest multiple $= 7x$

$$= 7 \times 10 = 70$$

38. (b) $15xy(x - 3y) - 3y(x - 3y)$

$$= (x - 3y)(15xy - 3y)$$

$$= 3y(5x - 1)(x - 3y)$$

$$= 3y(x - 3y)(5x - 1)$$

39. (c) $(761)^2 - (239)^2 = ?$

$$\therefore \quad ? = (761 + 239)(761 - 239)$$

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

$$\Rightarrow \quad ? = 1000 \times 522 = 522000$$

40. (c) According to the question,

$$2x + 27 + 13 = 60$$

$$\Rightarrow \quad 2x = 60 - 40 \Rightarrow 2x = 20$$

$$\Rightarrow \quad x = 10$$

41. (c) $(a + 2b - c)^2 = a^2 + 4b^2 + c^2 + 4ab - 4bc - 2ac$

$[\because (a+b+c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ac]$

42. (b) Area of floor $= 30 \times 12\ m^2$

and area of a carpet $= 3 \times 2\ m^2$

Hence, number of carpets $= \frac{30 \times 12}{3 \times 2} = 60$

43. (a) According to the question,

Outer radius (r_1) of pipe $= 3$ cm

inner radius (r_2) of pipe $= 2$ cm

length of pipe $(h) = 70$ cm

$\therefore$ Volume of metal in the pipe $= \pi(r_1^2 - r_2^2) \times h$

$= \pi(3^2 - 2^2) \times 70$

$= \pi(9 - 4) \times 70$

$= \pi \times 5 \times 70 = 350\ \pi\ cm^3$

44. (c) Let the base of original triangle $= x$

and height $= y$

$\therefore$ Area $= \frac{1}{2} \times x \times y = \frac{xy}{2}$

According to the question,

doubling the base and height, new area

$= \frac{1}{2} \times 2x \times 2y = 2xy = 4 \times \frac{1}{2}xy$

$= 4 \times$ area of original triangle

Hence, the new area will be four times the original area.

45. (c) Let the radii of cylindrical vessels be x and $3x$, respectively and their heights be y and $2y$ respectively,

$\therefore$ Ratio of their volumes $= \frac{\pi x^2 y}{\pi(3x)^2 \times 2y}$

[$\because$ Volume of cylinder $= \pi r^2 h$]

$= \frac{x^2 y}{18x^2 y} = \frac{1}{18} = 1:18$

46. (b) Here, the denominators of all rational numbers are equal. The number is the smallest, which the number has the greatest negative integer numerator.

Hence, the smallest rational number is $-\frac{5}{7}$.

47. (a) Statement A is correct, Fractions are rational numbers but integers are not.

48. (b) $\frac{21}{24} \times \frac{8}{7} = \frac{7 \times 3 \times 8}{8 \times 3 \times 7} = 1$

49. (c) According to the question, the equation is

$(x - 3) \times 4 = 20$

$\therefore$ $4(x - 3) = 20$

50. (b) Let the fourth angle of the quadrilateral is x.

$\therefore$ Sum of remaining three angles $= 2x$

We know that, sum of all the angles of a quadrilateral is 360°.

$\therefore$ $2x + x = 360° \Rightarrow 3x = 360°$

$\Rightarrow$ $x = 120°$

Hence, the fourth angle is 120°.

51. (c) $\frac{2x - 3}{4} - \frac{2x - 1}{2} = \frac{x - 2}{3}$

$\Rightarrow \frac{2x - 3 - 4x + 2}{4} = \frac{x - 2}{3}$

$\Rightarrow \frac{-2x - 1}{4} = \frac{x - 2}{3}$

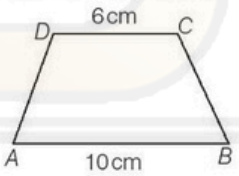
$\Rightarrow -6x - 3 = 4x - 8$

$\Rightarrow -6x - 4x = -8 + 3$

$\Rightarrow -10x = -5$

$\Rightarrow x = \frac{5}{10} = \frac{1}{2}$

52. (b) According to the question,



Here, AB and CD both are opposite sides and $\angle A + \angle D = 180°$. Hence, AB will be parallel to CD.

Hence, $ABCD$ is a trapezium.

53. (d) Total outcomes $= 6(1, 2, 3, 4, 5, 6)$

Favourable outcome (number greater than 1 and odd) $= 2(3, 5)$

$\therefore$ Required probability $= \frac{2}{6} = \frac{1}{3}$

54. (c) According to the question,

Total students $= 15$

Number of boys $= 15 - 5 = 10$

$\therefore$ Probability that the winner is boy $= \frac{10}{15} = \frac{2}{3}$

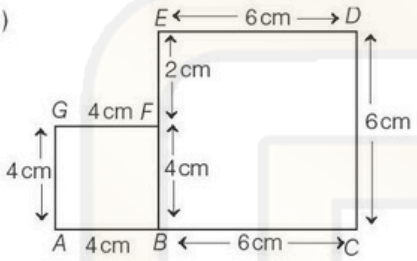
55. (b) According to the question,

Total person = 300

Number of persons playing cricket = 30

Sector angle in pie chart $= \frac{30}{300} \times 360^\circ = 36^\circ$

56. (b)



Area of first square $= 16\,cm^2$

Side of first square $= \sqrt{16} = 4$ cm

Area of second square $= 36\,cm^2$

Side of second square $= \sqrt{36} = 6$ cm

When both the squares are placed adjacent to each other, then the perimeter of the figure

$= AB + BC + CD + DE + EF + FG + GA$

$= 4 + 6 + 6 + 6 + 2 + 4 + 4$ [$\because EF = BE - BF$]

$= 32$ cm

57. (b) $\because 16^2 = 256$ and $17^2 = 289$

$16^2 < 269 < 17^2$

Hence, the number which must be added to

$= 289 - 269 = 20$

to make if a perfect square.

58. (d) We know that,

Volume of cube = $(\text{Side})^3$

According to the question,

$\therefore$ Volume of new cube

= Sum of volume of three cubes

$= 6^3 + 8^3 + 10^3$

$= 216 + 512 + 1000 = 1728\,cm^3$

Hence, the side of new cube $= \sqrt[3]{1728} = 12$ cm

59. (d) Square of $9 = 9 \times 9 = 81$

Square of $10 = 10 \times 10 = 100$

$\therefore$ Sum of squares of 9 and $10 = 81 + 100 = 181$

$13^2 < |181| < 14^2$

$169 < |181| < 196$

Now, $181 - 169 = 12$ (least number)

and $196 - 181 = 15$

Hence, the smallest number that should be added to are subtracted from the sum of squares of 9 and 10 to make it a perfect square is 12.

60. (c) $[\sqrt{(24)^2 + 7^2}]^3$

$= (\sqrt{576 + 49})^3$

$= (\sqrt{625})^3$

$= (25)^3$

$= 25 \times 25 \times 25$

$= 15625$

61. (c)

Men	Days
5	28
x	7

$\therefore \quad \frac{5}{x} = \frac{7}{28}$

$\Rightarrow \quad 5 \times 28 = x \times 7$

$\Rightarrow \quad x = \frac{5 \times 28}{7}$

$\Rightarrow \quad x = 20$

Hence, the number of men required = 20

62. (b) Let the marked price of pressure cooker = ₹x

$\therefore$ Cost price (CP) = ₹ $x \times \frac{9}{10}$

and selling price (SP) = ₹ $x \times \frac{108}{100}$

Hence the profit per cent $= \frac{SP - CP}{CP} \times 100$

$= \frac{\frac{108}{100}x - \frac{9}{10}x}{\frac{9}{10}x} \times 100$

$= \frac{108 - 90}{100} \times \frac{10}{9} \times 100$

$= 18 \times \frac{10}{9}$

$= 20\%$

63. (d) Let the rate of GST be x%.

According to the question,

$\therefore \quad 1200 + 1200 \times \frac{x}{100} = 1344$

$$\Rightarrow \quad 12x = 144$$

$$\Rightarrow \quad x = \frac{144}{12} = 12\%$$

64. (c) Let the population of a city be x.

According to the question, new population

$$= x \times \frac{110}{100} \times \frac{80}{100} = \frac{22}{25}x$$

$\therefore$ The net decrease population

$$= \frac{x - \frac{22}{25}x}{x} \times 100 = \frac{3}{25} \times 100 = 12\%$$

65. (c) Let the number be x.

According to the question,

New number $= x \times \frac{120}{100} \times \frac{80}{100} = \frac{24x}{25}$

$\therefore$ The net decrease the number $= \frac{x - \frac{24}{25}x}{x} \times 100$

$$= \frac{1}{25} \times 100 = 4\%$$

66. (c) Malleability is the property of metals by which they can be beaten into thin sheets. Gold and silver are the most malleable and ductile metals.

67. (c) Wood is not a fossil fuel. A fossil fuel is a fuel formed by natural processes, such as anaerobic decomposition of buried dead organisms, containing organic molecules originating in ancient photosynthesis that release energy is combustion.

68. (b) Rayon is described as a regenerated fibre because the cellulose, obtained from soft wood-pulp which is converted into soluble compound which is chemically solidified to form synthetic fiber.

69. (b) Copper vessel is exposed to moist air for a long time, it acquires a dull green coating on its surface the materials of this green coating is a mixture of copper carbonate and copper hydroxide.

$$2Cu(s) + H_2O + CO_2 + O_2 \longrightarrow \underset{\text{Copper hydroxide}}{Cu(OH)_2} + \underset{\text{Copper carbonate}}{CuCO_3(s)}$$

70. (d) The most abundant non-metal found in the Earth's crust is oxygen. Hence, option (d) is correct.

71. (c) Dead plants slowly get converted to coal under high pressure and high temperature. This type of fuel is known as fossil fuel.

72. (c) The process of fermentation was discovered by a French chemist Louis Pasteur in 1857.

It is an anaerobic enzymatic respiration process involving decompostion or anaerobic oxidation of organic compound into CO_2, alcohol/lactic acid and energy. This process is found in some bacteria and fungi.

73. (c) Carbon is the only non-metal which conducts electricity. When carbon in the form of graphite one valence electron of each carbon atom remains free, thus making graphite a good conductor of electricity.

74. (a) *Amoeba* is a protozoan. It is a unicellular eukaryotic microorganism. Its body covered by plasmalemma and bears a number of pseudopodia, which helps in capturing food in water bodies.

75. (d) Ploughing is a method to loosen the soil before sowing seed. It brings the soil that is rich in nutrients to the top from layers below, but does not add any nutrients of the soil.

76. (d) Kharif crop are sown during the onset of monsoon in various parts of the country, while harvested during the months of September and October. For example, cotton, maize, paddy, bajra, soybean, etc.

77. (b) Tuberculosis and typhoid are bacterial diseases. Typhoid is caused by *Salmonella typhi* and *S paratyphi* the flagellate bacilli bacteria and tuberculosis is caused by *Mycobacterium tuberculosis*. This is commonly called Koch's infection.

78. (d) Dolly, the sheep, was born on 5th July, 1996 was first mammal to be produced through cloning (differentiated animal cell). It is the production of organism, which are genetically identical to their parents. These idential structures are called clones.

79. (c) External fertilisation is a mode of reproduction in which a male organism's sperm fertilises a female organism's egg outside of the female's body. For example, In amphibian (toads, frogs), mostly algae, bryophytes, salmon, starfish, etc. external fertilisation takes place in water.

80. (d) Friction is increased by treading of tyres. Tread does have an influence on traction in road tires, if it is not so high that is lefts the tread ground off the road (<0.2 mm) helps sink tread rubber into rough road surfaces and penetrate lubricats or dirt. Peaks in the tread increase press into surface services and add contact points between the road and tyre and thus increase friction.

81. (d) Testosterone is a male sex hormone secreted by testis. It promotes secondary sexual characteristics such as increased muscle and body mass and the growth of body hair. Adrenaline hormone is a stress hormone or emergency hormone. Insulin is secreted by β cells of islet of Langerhans of pancreas, and oestrogen is a female hormone secreted by graffian follicles on the ovaries.

82. (c) Frictional force is a contact force. A contact force is any force that requires contact to occurs. e.g., Friction force and a non-contact force is force which acts on an object without coming physically in contact with it. e.g., Gravitational force, electrostatic force, magnetic force etc.

83. (c) Nm^{-1} is not a unit of pressure. The force applied is perpendicular to the surface of object per unit area is known as pressure.

$$\text{Pressure } (P) = \frac{\text{Force } (F)}{\text{Area } (A)}$$

The SI unit of pressure is N/m^2, pascal and CGS unit is dyne cm^{-2}.

84. (b)

Fuels	Calorific value (kJ/kg)
LPG	55,000
CNG	50,000
Petrol	45,000
Diesel	45,000

Hence, LPG give maximum amount of heat on burning.

85. (c) National parks protected whole sets of ecosystems, while wildlife sanctuaries provide protection to wild animals. It is an area where animal habitats and their surroundings are protected from any sort of human disturbance. The capturing and killing are strickly prohibited in these regions.

86. (b) Mitochondria called the power house of the cell. These organelles are involved in aerobic cellular respiration, i.e. oxidation of cellular nutrients and energy generation of the cells as ATPs.

87. (d) CNG is a natural gas stored under high pressure. Burning of natural gas produces nitrogen oxides, sulphur dioxide, carbon dioxide and carbon monoxide in low quantities thus, it is a non-polluting fuel.

88. (a) Cell wall is found in plant cells. It is the outermost, rigid protective covering present in plants. It is composed of cellulose and hemicellulose pectin. It maintains the shape of plant cell. It is absent in animal cells.

89. (d) The richter scale is scale of numbers used to tell the power (or magnitude) of earthquakes. The richter scale calculates an earthquake's magnitude from the amplitude of the earthquake's largest seismic wave recorded by a seismograph.

90. (b) Carbon monoxides produced due to incomplete combustion of petrol and diesel reduces the oxygen carrying capacity of blood.

91. (b) Venus and Uranus planets of ours solar system rotate from East to West.

92. (d) Acid rain results when sulphur dioxide (SO_2) and nitrogen oxides (NO_2) are emitted into atmosphere and transported by wind and air currents. The SO_2 and NO_2 react with water, oxygen and other chemicals to form sulphuric and nitric acids.

93. (c) In terms of increasing distance from Sun the correct sequence of planets is

Mercury, Venus, Earth, Mass, Jupiter, Saturn, Uranus, Neptune.

Hence, option (c) is correct.

94. (a) Image is formed by regular reflection. When a ray of light approaches a smooth polished surface and the light ray bounces back, it is called the reflection of light.

95. (c) The intensity or loudness of a sound depends upon the extent to which the sounding body vibrate *i.e.,* the amplitude of vibration. A sound is loudness as the amplitude of vibration is greates. Loudness is measured in units called decibels.

96. (c) Electric current does not flow through solid sodium chloride. For the electric current to flow a solution is needed so that there is a formation of positively charge cations and negatively charged anions.

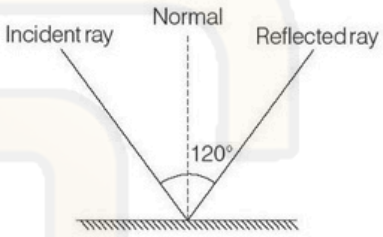
97. (d) An electric current can produce heating, chemical and magnetic effects. When a current is flowing in conductor, then magnetic field produces around the conductor. When a current flows through a conductor, heat energy generates in the conducts that is known as heating effect of electric current.

When an electric current flows through a conducting solution chemical reaction take place in solution. This is called the chemical effect of electric current.

98. (b) The light from the stars reaches the earth in 20 yrs.

99. (a) As we know that,

incident angle $\angle i$ = reflected angle $\angle r$



Given, $\angle i + \angle r = 120°$

$$\angle i = \frac{120}{2} = 60° \qquad [\because \angle i = \angle r]$$

100. (b) The process of depositing a layer of any desired metal on another material by means of electricity is called electroplating, the deposited metal becomes part of the existing product with the plating/coating.