1. An iron block sides 5 cm × 10 cm × 15 cm is kept on the floor. The presure exerted by it is minimum if it kept as :
   (1) 5 × 10 cm sides
   (2) 10 × 15 cm sides
   (3) 5 × 15 cm sides
   (4) by any two sides

2. Astronauts wear space suits during space walk in space in order to maintain the :
   (1) Vacuum pressure
   (2) space pressure
   (3) Atmospheric pressure
   (4) space shuttle pressure

3. The unit of coefficient of friction is –
   (1) Newton
   (2) Unit less
   (3) Radian
   (4) Newton/metre

4. The normal force between two surfaces is 50 N, and the force required to maintain a constant speed of sliding is 25 N. The coefficient of dynamic friction is –
   (1) 25
   (2) 2
   (3) 75
   (4) 0.5

5. An incident ray makes 30° with the normal at the point of incidence. The reflected ray will make
   (1) 30° with the normal.
   (2) 60° with the normal.
   (3) 90° with the normal.
   (4) 180° with the normal.

6. A reflected ray always makes an angle
   (1) of 90° with the normal.
   (2) of any degree with the normal.
   (3) of 90° with the incident ray.
   (4) equal to the angle of incidence with the normal.

7. A shrill sound has a _____ pitch and dull sound has a _____ pitch.
   (1) high, low
   (2) low, high
   (3) low, low
   (4) high, high

8. The pitch of a sound depends on the :
   (1) Frequency of the vibrating body
   (2) Amplitude of the vibrating body
   (3) Medium of propagation
   (4) None of the above

9. In a science quiz competition, Payel is asked a question where she had to choose the statement which was/were correct?
   (1) A strong electrolyte is a liquid or solution which conducts electricity very well.
   (2) A weak electrolyte is a liquid or solution which conducts electricity to a lesser extent.
   (3) A solid electrical conductor through which an electric current enters or leaves something like a dry cell, is called an electrode.
   (4) All the above

10. Recently, in a science class test, you are asked a question where you have to say whether the statements are correct or not?
    (1) The positively charged electrode is called anode.
    (2) The negatively charged electrode is called cathode.
    (3) An arrangement having two electrodes kept in a conducting liquid in a vessel is called an electrolytic cell.
    (4) All the above

11. A device used to test the charge on an object is called
    (1) Ammeter
    (2) Electroscope
    (3) Seismograph
    (4) None of these

12. Which is not a way of development of charge on a body ?
    (1) Charge by Rubbing
    (2) Charging by conduction
    (3) charge by induction
    (4) Charge by disintegration

13. Which one of the following is not a member of our solar system ?
    (1) Pluto
    (2) Moon
    (3) Halley comet
    (4) Orion constellation

14. Which of the following constellation appears to have the shape of distorted W or M ?
    (1) Leo Major
    (2) Cassiopeia
    (3) Orion
    (4) Ursa Major

15. Water bottles are made up of
    (1) PET
    (2) PE
    (3) PS
    (4) PP

16. Which of the following plastic is used for coating electrical wires ?
    (1) Polythene
    (2) PVC
    (3) Polystyrene
    (4) Perspex

17. Canopy in the fighter jet plane is made up of
    (1) PVC
    (2) Teflon
    (3) Acrylic
    (4) HDPE

18. Non-Stick cookware have coating of
    (1) Teflon
    (2) Bakelite
    (3) Melamine
    (4) Polythene

19. The electrode used in electrolysis is made of
    (1) Phosphorus
    (2) Graphite
    (3) Zinc
    (4) Silicon

20. Which of the following elements undergoes rusting
    (1) Iron
    (2) Nickel
    (3) Silver
    (4) Titanium

21. Galvanised iron is protected from rust because it has a coating of :
    (1) Hg
    (2) Sn
    (3) Cr
    (4) Zn

22. Coke is not used in the preparation of
   (1) $CO + H_2$
   (2) $CO + N_2$
   (3) iron
   (4) diamond.

23. Water gas is a mixture of
   (1) $CO + N_2$
   (2) $CO + H_2$
   (3) $CO + CO_2$
   (4) $CO + N_2 + H_2$

24. Destructive distillation of coal is the process of
   (1) heating coal in excess of air
   (2) heating coal in absence of air
   (3) heating coal with water
   (4) heating coal with carbon dioxide.

25. Which of the following are produced by nucelar reactions?
   (1) Sun
   (2) Heat
   (3) Light
   (4) All of the above

26. Which is necessary for combustion ?
   (1) Water
   (2) Air
   (3) Both
   (4) None of above

27. Which gas is the best extinguisher ?
   (1) CO_2
   (2) CO
   (3) Water vapour
   (4) None of these

28. Biocides are chemical substances which are used to control of -
   (1) Weeds
   (2) Pest
   (3) Disease
   (4) Fungus

29. If two or more crops are grown in a definite row pattern is called as -
   (1) Intercropping
   (2) Crop rotation
   (3) Mixed cropping
   (4) Sowing

30. Carrier of malaria-causing protozoan is
   (1) Female Anopheles mosquito
   (2) Cockroach
   (3) Housefly
   (4) Butterfly

31. Virus passess
   (1) DNA only
   (2) Nucleic acid, DNA or RNA
   (3) Protein only
   (4) Nucleid acid and protein

32. MAB stands for
   (1) Man and Biodiversity
   (2) Mammals and Biosphere
   (3) Man and Biosphere
   (4) Man and Biology

33. 'Red Data Book' provides information of
   (1) Threatened species
   (2) Biota and Red Sea
   (3) World flora
   (4) World fauna

34. Genes are located in
   (1) chrpmosomes
   (2) plastids
   (3) cytoplasm
   (4) lysosome

35. A group of similar cells combine to form
   (1) tissue
   (2) organ
   (3) organisms
   (4) organelles

36. The primary organs of human male reproductive system :
   (1) vas deferens
   (2) ovaries
   (3) testes
   (4) kidneys

37. Sperm and ovum fuse to form a
   (1) foetus
   (2) embryo
   (3) zygote
   (4) sperm

38. Which of the following disease results by endocrine disorder?
   (1) Typhoid
   (2) Jaundice
   (3) Goitre
   (4) Pneumonia

39. Which hormone regulates the growth of metamorphosis in frog?
   (1) Adrenalin
   (2) Insulin
   (3) Thyroxine
   (4) Cortisol

40. Kyoto protocol is associated with ?
   (1) Climate change
   (2) Aquaculture
   (3) Water pollution
   (4) Of the above

41. if $x * y = \sqrt{x^2 + y^2}$, the value of $(1 * 2\sqrt{2})(1 * -2\sqrt{2})$ is :
   (1) −7
   (2) 0
   (3) 2
   (4) 9

42. The value of $4 - \dfrac{5}{1 + \dfrac{1}{1 + \dfrac{1}{2\frac{1}{4}}}}$
   (1) $\dfrac{40}{31}$
   (2) $\dfrac{4}{9}$
   (3) $\dfrac{23}{22}$
   (4) $\dfrac{31}{40}$

43. If A and B are real numbers and $A^2 + B^2 = 0$ then :
   (1) A > 0, B > 0
   (2) A < 0, B > 0
   (3) A > 0 = B
   (4) A = − B

44. Solve for x : $\dfrac{6x - 7}{2x + 1} = \dfrac{3x + 1}{x + 5}$.
   (1) 5
   (2) 3
   (3) 2
   (4) 1

45. A number consists of two digits. The digit at ten's place is two times the digit at the unit's place. The number formed by reversing the digits, is 27 less than the original number. Find the original number.
   (1) 63
   (2) 36
   (3) 42
   (4) 84

46. Divide 300 into two parts so that half of one part may be less than the other by 48. Find the larger part.
   (1) 132
   (2) 168
   (3) 160
   (4) 170

47. How many sides does a regular polygon have if each of its interior angles is 165° ?
   (1) 12
   (2) 24
   (3) 9
   (4) 6

48. In a regular polygon of n sides, the measure of each internal angle is

   (1) $\dfrac{360°}{n}$

   (2) $\left(\dfrac{2n-4}{n}\right)90°$

   (3) n 90°
   (4) 2n right angles.

49. If one angle of a parallelogram is of 65° then the measure of the adjacent angle is
   (1) 65°
   (2) 115°
   (3) 25°
   (4) 90°

50. To construct a parallelogram, the minimum number of measurements required is :
   (1) 2
   (2) 3
   (3) 4
   (4) 1

51. The minimum number of dimensions needed to construct a rectangle is :
   (1) 1   (2) 2
   (3) 3   (4) 4

52. The minimum number of measurements needed to construct a square is :
   (1) 1
   (2) 2
   (3) 3
   (4) 4

53. The number of times a particular entry occurs in a set of data is known as its :
   (1) range   (2) class-size
   (3) frequency   (4) class-interval

54. The difference between the highest and the lowest values of the observations in a given set of data is called as :
   (1) range   (2) frequency
   (3) class-size   (4) class-interval

55. The mid-value of a class-interval is called as :
   (1) class-limit   (2) class-mark
   (3) class-width   (4) range

56. A large basket of fruits contains 3 oranges, 2 apples and 5 bananas. If a piece of fruit is chosen at random, what is the probability of getting an orange?

   (1) $\dfrac{4}{5}$ (2) $\dfrac{1}{2}$

   (3) $\dfrac{7}{10}$ (4) $\dfrac{3}{10}$

57. In United States, 43% of people wear a seat belt while driving. If one person is chosen at random, what is the probability of people wearing a seat belt?

   (1) $\dfrac{1}{34}$ (2) $\dfrac{1}{18}$

   (3) $\dfrac{1}{57}$ (4) $\dfrac{43}{100}$

58. In a school, 14% of students take computer classes and 67% take drama classes. What is the probability that a student neither takes computer class not takes drama class?

   (1) $\dfrac{8}{100}$ (2) $\dfrac{29}{100}$

   (3) $\dfrac{53}{100}$ (4) $\dfrac{19}{100}$

59. Find the value of $\sqrt{15625}$ and the use it to find the value of $\sqrt{156.25}+\sqrt{1.5625}$.
   (1) 13.25   (2) 13.35
   (3) 13.65   (4) 13.75

60. Find the square root of 2 correct to three places of decimal.
    (1) 1.401   (2) 1.141
    (3) 1.414   (4) 1.410

61. 7396 students are sitting in an auditorium in such a manner that there are as many students in a row as there are rows in the auditorium. How many rows are there in the auditorium?
    (1) 96
    (2) 86
    (3) 87
    (4) 98

62. If $169 = b^2 + 25$, then find the value of b. The following steps are involved in solving the above problem. Arrange them in sequential order from the first to the last.
    (A) $b^2 = 144$
    (B) $169 = b^2 + 25 \Rightarrow b^2 = 169 - 25$
    (C) $b = \pm \sqrt{144} \Rightarrow b = \pm 12$
    (1) BAC   (2) BCA
    (3) CAB   (4) ACB

63. If a and b are whole numbers such that $a^b = 512$, where a > b and 1 < b < 4, then $\sqrt[b]{a}$ = _____ .
    (1) 2
    (2) 3
    (3) 4
    (4) 8

64. The volume of a spherical ball is given by the formula $V = \frac{4}{3}\pi r^3$, where V is the volume and r is the radius. Find the diameter of the sphere whose volume is $\frac{117128}{21}$ m^3.
    (1) 22 m   (2) 11 m
    (3) 33 m   (4) 44 m

65. If S.P. of an article is $\frac{3}{2}$ of its C.P., then profit is
    (1) 10%   (2) 20%
    (3) 50%   (4) 25%

66. A cooker which is generally sold for Rs. 800 was sold for Rs. 700 due to festival season. What per cent discount was allowed ?
    (1) $12\frac{1}{2}\%$ (2) 10%
    (3) $14\frac{2}{7}\%$ (4) 15%

67. If $x^2 + \frac{1}{x^2} = 27$, then value of $x + \frac{1}{x}$ is
    (1) 9   (2) 29
    (3) $\sqrt{29}$ (4) 3

68. The quotient of division of $x^3 - 3x^2 + 5x - 3$ by $x^2 - 2$ is
    (1) $(x + 3)$ (2) $(x - 3)$
    (3) $(x + 2)$ (4) $(x - 2)$

69. The number of faces of a triangular prism are :
    (1) 4
    (2) 5
    (3) 6
    (4) 7

70. The number of edges of a cuboid are :
    (1) 10
    (2) 11
    (3) 12
    (4) None

71. The volume of a right circular cylinder of base radius 35 cm is 154 dm^3. Its height will be
    (1) 4 cm
    (2) 40 cm
    (3) 120 cm
    (4) 40 dm

72. Two right circular cylinders of equal volume are such that their radii are in the ratio 2 : 3. The ratio of their heights will be
    (1) 2 : 3
    (2) 4 : 9
    (3) 3 : 2
    (4) 9 : 4

73. If $\frac{x}{y} = \left(\frac{2}{5}\right)^{-3} \times \left(\frac{15}{8}\right)^{-3}$, then $\left(\frac{x}{y}\right)^{-1}$ is equal to
    (1) $\frac{27}{64}$ (2) $\frac{81}{64}$
    (3) $\frac{-81}{64}$ (4) $\frac{-16}{81}$

74. If $x = \left(8^{\frac{2}{3}} \cdot 32^{-\frac{2}{5}} \right)$, then $x^{-5} =$
    (1) $\frac{1}{32}$ (2) −1
    (3) 1   (4) −5

75. A train crosses a stationary person in 3 seconds while it takes 10 seconds to cross a platform, travelling at same speed. If the length of the platform is 210 metres, what is the length of the train?
    (1) 180 m
    (2) 135 m
    (3) 90 m
    (4) 45 m

76. The speed of a boat in still water is 12 km/h. If it takes 1 hour to go upstream 6 kms; then in what time will it return same distance downstream?
    (1) 20 min
    (2) 30 min
    (3) 5 min
    (4) 10 min

77. The abscissa of the point $(-1, 0)$ is
    (1) 0
    (2) -1
    (3) either 0 or -1
    (4) none of these

78. The ordinate of the point $(4, -1)$ is
    (1) -1 (2) 4
    (3) either -1 or -4 (4) none of these

79. The sum of the digits of a 2-digit number is 7. If the digits are reversed, the number formed is 9 less than the original number. Find the number.
    (1) 40
    (2) 43
    (3) 49
    (4) 53

80. While solving a problem, by mistake, Minakshi squared a number and then subtracted 25 from it rather than first subtracting 25 from the number and then squaring it. But she got the answer right. What was the given number?
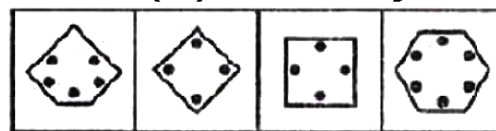   (1) 13
    (2) 38
    (3) 48
    (4) 58

81. Complete the analogy -

    ⏐ ⌐ ⊓ ⏐ ☐ ◡ ☐ ⏐ ⊔ ?
    (1) ☐ ◡
    (2) ∟ ☐
    (3) ⏐ ⊓
    (4) ⌐ ⏐

Directions (82) : Find the odd figure out.
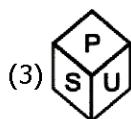
82.
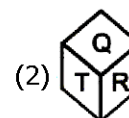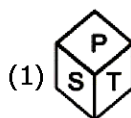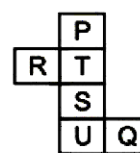   (1)   (2)   (3)   (4)

83. The number opposite to 1 is -

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

84. Which of the following dices is identical to the unfolded figure as shown here ?

    (1)   (2)
    (3)   (4)
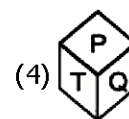
Directions : (85 to 87) A cube painted red on two adjacent faces and black on the faces opposite to the red faces and green on the remaining faces is cut into 64 smaller cubes of equal size.

85. How many cubes have no face painted ?
    (1) 0
    (2) 4
    (3) 8
    (4) 16

86. How many cubes have only one face painted ?
    (1) 8
    (2) 24
    (3) 28
    (4) 48

87. How many cubes have less than three faces painted ?
    (1) 8
    (2) 24
    (3) 28
    (4) 56

Direction (Q.88) : Find the missing term.

88. B, DE, IJK, ? BCDEF

    (1) QPST   (2) PQRS
    (3) RSTU   (4) QRST

    Diretions : (89) Letters in the following series are in a particular order. Select the correct group of letters to complete the pattern.

89. _ l m n o k _ m n o k l _ n o k l m _ o

    (1) l k lm   (2) l lmm
    (3) k lmn   (4) mlmn

90. Statement :Any students, who does not behave properly while in the school, brings bad name to himself and also to the school.
    Conclusions : I. Such students should be removed from the school.
    II. Strict discipline does not improve behaviour of the students.
    (1) If only conclusion I follows.
    (2) If only conclusion II follows.
    (3) If neither I nor II follows.
    (4) If both conclusions I and II follow.

91. In a row of girls facing North, Reena is 10th to the left of Pallavi, who is 21st from the right end. If Malini, who is 17th from the left end, is fourth to the right of Reena, how many girls are there in the row?
    (1) 37
    (2) 43
    (3) 44
    (4) Data inadequate

    Direction (Q.92 to Q.96) : Study the following information carefully and answer the questions that follow
    (i) Madhu and Shobha are good in Dramatic and Computer Science.
    (ii) Anjali and Madhu are good in Computer Science and Physics.
    (iii) Anjali, Poonam and Nisha are good in Physics and History.
    (iv) Nisha and Anjali are good in Physics and Mathematics.
    (v) Poonam and Shobha are good in History and Dramatics.

92. Who is good in Computer Science, History and Dramatics ?
    (1) Anjali
    (2) Madhu
    (3) Shobha
    (4) Nisha

93. Who is good in Physics, Dramatics and Computer Science
    (1) Shobha   (2) Poonam
    (3) Madhu   (4) Anjali

94. Who is good in Physics, History and Dramatics ?
    (1) Poonam   (2) Shobha
   (3) Madhu   (4) Anjali

95. Who is good in History, Physics, Computer Science and Mathematics ?
    (1) Poonam   (2) Nisha
    (3) Madhu   (4) Anjali

96. Who is good in Physics, History and Mathematics but not in Computer Science ?
    (1) Madhu   (2) Poonam
    (3) Nisha   (4) Anjali

    Directions (97 to 99) : In each of these questins, three words are related in some way. The relationship among the words in the question can best be represented by one of the five diagrams (1), (2), (3), (4) given below. Mark your answer accordingly.
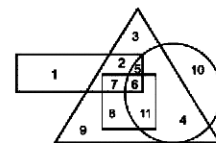
    (1)   (2)

    (3)   (4)
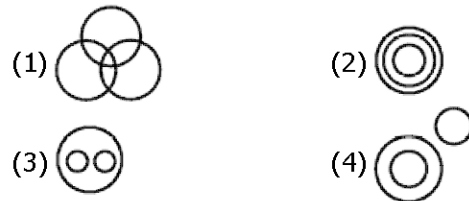
97. Cabinet, Home Minister, Minister
98. Musicians, Singers, Women
99. Rings, Ornaments, Diamond rings

    Direction : (100) The following question are based on the diagram given below:

    (1) The rectangle represents government employees.
    (2) The triangle represents urban people.
    (3) The circle represents graduates.
    (4) The square represents clerks.

100. Which of the following statements is true ?
    (1) All government employees are clerks.
    (2) Some government employees are graduates as well as clerks.
    (3) All government employees are graduates.
    (4) All clerks are government employees but not graduates.