All India Science Teachers' Association, West Bengal

SCIENCE APTITUDE AND TALENT SEARCH TEST - 2023

Time : 1 hr. 45 min. **Full Marks : 60**

Class VII

INSTRUCTIONS:

1) Write your name, class, name of school and roll number both at left and right side on the answer sheet. 2) In the question paper you will find four probable answers: a), b), c) and d) against each question. Find out which one of the answers is correct or the best. There are four circles on the answer sheet corresponding to each question below a), b), c) and d). Now mark the circle below the letter of selected answer by putting a cross mark distinctly with a ball pen. If c) is the correct answer, you are to mark ◯◯⊗◯ . **3) 1 mark will be awarded for each correct answer and 1 mark will be deducted for 3 wrong answers.** 4) Don't write anything on the question paper. Don't mark answers on the question paper. Submit the answer sheet only after the examination. 5) You may use additional blank sheet for any rough work, if necessary. 6) Do not waste time for any question which appears difficult to you, better try next question. If you consider first answer to be wrong, blacken it like ● and put ⊗ on correct answer.

1. The one of the following used as a source of carbohydrate is
   a) straw b) chaff c) rice d) egg
2. Contractibility of muscles is maintained by
   a) melanin b) myosin c) collagen d) protamin
3. Disease of a child of age below one year due to protein deficiency is
   a) kwashiorkor b) marasmus c) anaemia d) ricket
4. When microbes cause disease in our body, the substance that increases in our body is
   a) hydrochloric acid b) nitric oxide
   c) lactic acid d) carbon di oxide

5. The carbohydrate that does not provide energy but effective in reducing constipation is

   a) fructose b) sucrose c) starch d) cellulose

6. Human beings depend on plants for food. For food, plants depend on

   a) bird b) butterfly c) oxygen of air d) sun

7. The one which is not a greenhouse gas is

   a) carbon dioxide b) oxygen

   c) nitrous oxide d) methane

8. The correct sequence in the following is

   a) Grass→grasshopper→frog→snake→peacock

   b) Grass→frog→grasshopper→peacock→snake

   c) Grass→grasshopper→snake→frog→peacock

   d) Peacock→grasshopper→frog grass→snake

9. Result of greenhouse effect will be

   a) rise of water level in the sea.

   b) decrease of water level in the sea.

   c) decrease in evaporation of sea water.

   d) rise in the amount of salt in sea water.

10. Function of root hair is absorption of

    a) water b) oxygen

    c) carbon dioxide d) water and minerals

11. Cross pollination occurs in

    a) marvel-of-peru b) pumpkin

    c) jungle geranium d) peanut

12. Example of an incomplete flower is

    a) humming bird flower b) pea flower

    c) pumpkin flower d) Asian pigeon win flower

13. Correct match between the items in the left coloumn A and the right column B is

Gr. A	Gr. B
i) simple fruit	p) custard apple
ii) aggregate fruit	q) pineapple
iii) composite fruit	r) Indian blackberry

a) i)→r. ii)→p, iii)→q b) i)→p, ii)→q, iii)→r

c) i)→r. ii)→q. iii)→p d) i)→q, ii)→r, iii)→p

14. Plants absorb water from soil using the process

a) diffusion b) osmosis

c) transportation d) evaporation

15. A seedling gets food from

a) cotyledon b) water c) soil d) air

16. Correct match between the items in the left column A and the right column B is

Gr. A	Gr. B
i) ricket	m) vit A
ii) night blindness	n) vit D
iii) deficiency of iron	o) anaemia

a) i)→n, ii)→m, iii)→o b) i)→o, ii)→m, iii)→n

c) i)→m, ii)→n, iii)→o d) i)→m, ii)→o, iii)→n

17. A food that gives adequate protein in low cost is

a) fish b) meat c) pulses d) gourd

18. Calorieless food is

a) carbohydrate b) protein c) fat d) vitamin

19. Water soluble vitamin is vitamin

a) A b) C c) D d) K

20. Due to the increased CO_2 level in atmosphere in Australia, the food value of eucalyptus leaves is decreasing. That poses problem for

a) koala b) kangaroo c) platypus d) emu

21. Coral is an invertebrate animal that belongs to phylum

a) porifera b) cnidaria

c) ctenophora d) platyhelminthes

22. Viviparous Germination is found in

a) sundari b) corn c) wheat d) paddy

23. Sundaland biodiversity spot includes

a) Meghalaya and Arunachal Pradesh.

b) Sikkim, Darjeeling, Dooars and Tarai.

c) Andaman and Nicobar islands.

d) Western Ghat mountain range.

24. Knee joint is a

a) ball and socket joint b) hinge joint

c) pivot joint d) saddle joint

25. Which one of the following has calcareous covering?

a) Earthworm b) Cockroach c) Starfish d) Snail

26. The largest animal on earth is

a) blue whale b) humpback whale

c) sperm whale d) African elephant

27. Research on behaviour of wild chimpanzee was taken up by

a) Jane Goodal b) Tinbergen

c) Konrad Lorenz d) Gopal Chandra Bhattacharya

28. Main food of termites is

a) nectar b) protein c) fat d) cellulose

29. Biodegradable waste material is

a) plastic b) banana peel

c) packet of biscuits d) syringe

30. Microbe that causes malaria is

a) virus b) bacteria c) protozoa d) fungi

31.

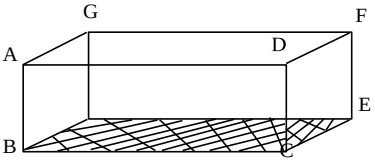


Fig. 1

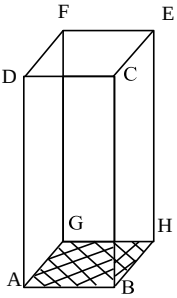


Fig. 2

Fig.1 and Fig 2. show a single brick kept in two different orientation on the ground. The correct statement from the following alternatives is

a) the weight of the brick and the pressure exerted on the ground are same in the two figures.

b) the weight of the brick in figures are different but the exerted pressure are same.

c) the weight of the brick is same in each figure but the exerted pressure is different.

d) both the weight of the brick and the pressure exerted in each case is different.

32. The human arm can be labelled as

a) third class of lever b) second class of lever

c) first class of lever d) mixed lever

33. When force is applied on any object, the possible occurrence(s) is(are)

a) an object at rest starts to move.

b) the velocity of a moving body changes.

c) change of the shape or size of the object.

d) all of a), b) and c).

34. Some optical occurrences and properties of light are listed in column A and column B respectively.

Column A (optical occurrences)	**Column B** (optical properties)
I. To see own image in miror	i) Dispersion
II. To burn a piece of paper by sunlight using a lens	ii) Refraction
III. Formation of rainbow	iii) Reflection

Correct match of the two columnd is

a) AI→Bi., AII→Biii, AIII→Bii.
b) AI→Biii, AII→Bii, AIII→Bi
c) AI→Bii, AII→Bi, AIII→Biii
d) AI→Bi, AII→Bii, AIII→Biii

35. A ray of light is incident at an angle of 30° on a plane mirror and suffers reflection. The angle of deviation of the ray of light due to reflection is

a) 60° b) 30° c) 180° d) 120°

36. The relation between the Celcius and Farenheit scale of temperature is

a) $\frac{C}{5} = F - \frac{32}{9}$ b) 9C = 5F – 160
c) $9C = F - \frac{32}{5}$ d) $\frac{C}{9} = \frac{F-32}{5}$

37. Natural luminous source is

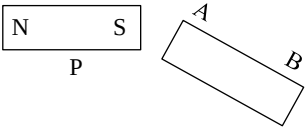
a) candle b) kerosene lamp c) firefly d) rohu fish

38. For a bar magnet, the ratio of geometric length to magnetic length is

a) $\frac{5}{6}$ b) $\frac{6}{5}$ c) $\frac{2}{3}$ d) $\frac{3}{2}$

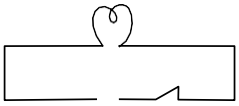
39. A ball is thrown vertically upward to a height h. It comes back to the ground. The distance traversed and the displacement of the ball are s and d respectively. Then

a) s = 2h, d = h b) s = 2h, d = 0
c) s = 0, d = 2h d) s = h, d = 0

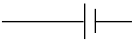
40. The correct statement among the following is
    a) action and reaction act on the same object
    b) the idea of force can be obtained from Newton's second law of motion.
    c) mass measures inertia of a body.
    d) the acceleration of freely falling body is zero.
41. The form of energy that got transformed and stored as non-renewable energy sources in coal and petroleum is
    a) bio energy b) wind energy
    c) mechanical energy d) electrical energy
42. A magnet or an electromagnet is not used in
    a) electric calling bell b) electric iron
    c) loud speaker d) electric motor
43. Among the given substances, the one which is attracted by a magnet is a
    a) a current carrying coper wire b) copper bottle
    c) silver spoon d) aluminum pipe
44. Two bodies of mass m and M are given some amount of heat energy, (m < M). If the objects are of the same material, the correct statement regarding the increase of temperature of the object is
    a) temperature change can not be ascertained from the given informations.
    b) temperature increase of m < temperature increase of M.
    c) both objects will have same increase of temperature.
    d) temperature increase of M < temperature increase of m.
45. 

    As shown in the figure a nickel bar AB is brought very close to a bar magnet P. In the nickel bar
    a) magnetic induction is not possible.
    b) N-pole will be induced at end A and attraction will occur.
    c) N-pole will be induced at end B and repulsion will occur.
    d) attraction will occur without any magnetic induction.

46. The diagram required to complete the circuit



(a)  (b) 

(c) (d) 

47. When a match stick is lit, energy conversion is
    a) heat→chemical and light
    b) mechanical→light and heat
    c) mechanical and chemical→light and heat
    d) electrical→chemical and heat
48. 1 Newton =
    a) 1 Kgm b) 1gcm c) 1gcm s^{-2} d) 1 Kgm s^{-2}
49. Fuse wire is used in electrical circuit for security. When excess current flows through that circuit, fuse wire
    a) melts b) bends c) emits light d) becomes cool
50. Electrical power is produced in
    a) solar cookers b) solar signal
    c) solar panel d) solar water heater
51. The force to be applied to stop a body of mass 6 kg moving with velocity 20 m/s, in 1 min is
    a) 1N b) 2N c) 3N d) 4N
52. Number of electrons in Na^+ ion is
    a) 12 b) 11 c) 10 d) 8
53. Formula of dichromate ion is
    a) $Cr_7O_2^{3-}$ b) $Cr_2O_7^{3-}$ c) $Cr_7O_2^{2-}$ d) $Cr_2O_7^{2-}$
54. Fat + caustic alkali→A + Glycerin. A is
    a) glucose b) fat c) soap d) phenyl
55. The gas which is essential for photosynthesis is
    a) hydrogen b) nitrogen
    c) oxygen d) carbon-di-oxide

56. X is present in the stomach. However presence of excess of it causes indigestion which requires the intake of milk of magnesia to undo the effect of X. X is

a) HCl b) H_2SO_4 c) HNO_3 d) H_3PO_4

57. Bones in our body have the main metallic constituent

a) K b) Mg c) Na d) Ca

58. An aqueous solution of blue vitriol is prepared. A clean iron knife is dipped into this solution for sometime. Name of the reddish brown layer deposited on iron knife and the kind of reaction are respectively

a) copper and substitution reaction

b) copper sulphate and combination reaction

c) ferrous sulphate and double decomposition reaction

. d) copper and dissociation reaction

59. The metallic oxide which gives blue colour to glass is

a) iron oxide b) cobalt oxide

c) chromium Oxide d) zinc oxide

60. The non metal which is liquid at room temperature is

a) bromine b) carbon c) iodine d) chlorine

61. The odd one among the following substances is

a) bauxite b) hematite

c) copper d) copper glance

62. Mixture of powdered chalk, salt and water can be separated by

a) filtration.

b) filtration and crystallisation.

c) crystallisation.

d) separation by magnet and crystallisation.

63. Mass number, atomic number, number of electrons and number of neutrons in $^{27}_{13}Al^{3+}$ are respectively

a) 27, 13, 10, 14 b) 27, 10, 13, 14

c) 27, 14, 13, 10 d) 13, 27, 14, 10

64. The formula of compound formed from zinc ion (Zn^{2+}) and phosphate radical (PO_4^{3-}) is

a) $ZnPO_4$ b) $Zn_2(PO_4)$ c) $Zn(PO_4)_2$ d) $Zn_3(PO_4)_2$

65. Leaf extract of marigold tree is used as

a) antacid b) pain killer c) antiseptic d) antibiotic

66. The substances used as pesticides are

a) Urea and Aldrin b) NPK and methyl parathion

c) Aldrin and Carbaryl d) Lime and D.D.T.

67. The value of pH in blood is

a) 0.9 – 1.05 b) 4.0 – 8.0 c) 6.02 – 7.05 d) 7.35 – 7.45

68. The formula of Formic Acid, Nitric Acid and Sulpuric Acid are respectively

a) HCOOH, HNO_3, H_2SO_4 b) HNO_3, HCOOH, H_2SO_4

c) HCl, HNO_3, H_2SO_4 d) H_3PO_4, HCOOH, HNO_3

69. An example of thermosetting polymer is

a) polythene b) PVC c) bakellite d) neoprene

70. The reaction in which two gaseous substances form a solid substance is

a) $H_2 + O_2 \rightarrow H_2O$ b) $NH_3 + Cl_2 \rightarrow NH_4Cl$

c) $H_2 + Cl_2 \rightarrow HCl$ d) $N_2 + H_2 \rightarrow NH_3$

71. To keep 885 bananas in some baskets in the way that each basket would contain the number of bananas equal to the number of baskets, a shop-keeper found that the number of bananas was 15 short of the required number. The number of baskets was

a) 35 b) 20 c) 25 d) 30

72. The price of sugar has increased by 25%. To keep the expense for sugar same, the consumption of sugar should be decreased by

a) 20% b) 25% c) 30% d) 15%

73. Only line of symmetry is to be found in

a) trapezium b) isosceles triangle

c) parallelogram d) scalene hexagon

74. Only rotational symmetry is to be found in

a) trapezium b) equilateral triangle

c) parallelogram d) scalene hexagon

75. The angle of rotational symmetry in a regular hexagon is

a) 45° b) 60° c) 75° d) 90°

76. Kakababu went to the market with Rs. $2x^2 - 3x + 7$. He spent Rs. $x^2 - 5x - 3$. Now he is left with Rs.

a) $3x^2 - 8x + 10$ b) $x^2 + 2x + 10$

c) $3x^2 + 2x + 10$ d) $x^2 - 2x + 4$

77. $\angle PQR = 40°$. X is a point on side QR. XY is a perpendicular from X on QP. Measure of $\angle QXY$ is

a) 10° b) 90° c) 40° d) 50°

78. Co-efficient of x° in the given expression $2x^2 - 3x + 1$ is

a) –3 b) 3 c) 1 d) 0

79. In Science Aptitude and Talent Search Test, a student answered 60 questions correctly and answered 30 questions wrongly. If 1 mark be awarded for each correct answer and 1/3 mark be deducted for each wrong answer, then the student will obtain

a) 40 marks b) 45 marks c) 50 marks d) 55 marks

80. The simplified value of $\frac{6 \times 3^2 \times 13^3}{3042}$ is

a) 234 b) 117 c) 78 d) 39

81. The length and breadth of a rectangle are x m. and y m. respectively. The area of a square having perimeter equal to that of this rectangle is

a) $\frac{1}{4}(x+y)^2$ sq.m. b) $\frac{1}{2}(x+y)^2$ sq.m.

c) $\frac{1}{4}(x+y)$ sq.m. d) $(x+y)^2$ sq.m.

82. How much is to be subtracted from the sum of $-25x^2 + 35xy + 9y^2$ and $40x^2 - 30xy - 8y^2$ to get $14x^2 + 4xy$?

a) $x^2 + 2xy + y^2$ b) $x^2 - xy + y^2$

c) $x^2 + xy + y^2$ d) $-x^2 + xy + y^2$

83. The simplified value of $(a + b)(a - b) + (b + c)(b - c) + (c + a)(c - a)$ is

a) 0 b) $a^2 + b^2 + c^2$

c) $2(a^2 + b^2 + c^2)$ d) $a^2 - b^2 + c^2$

84. The length of three sides of a triangle may be

a) 4 cm, 5 cm, 10 cm b) 4 cm, 7 cm, 2 cm

c) 5 cm, 6 cm, 7 cm d) 5 cm, 10 cm, 16 cm

85. The measure of one acute angle of a right angled triangle is double the other. The measure of the smallest angle of this triangle is

a) 15° b) 45° c) 60° d) 30°

86. The product of two positive numbers is 98 and quotient obtained by dividing the greater number by the smaller is 2. The greater number is

a) 42 b) 49 c) 28 d) 14

87. The simplified value of $\sqrt{5+\sqrt{2+\sqrt{196}}}$ is

a) 3 b) 4 c) 2 d) 1

88. The perimeter of a rectangle is equal to that of the square of area 32·49 sq.m. If the length of the rectangle is double of its breadth, then the breadth of the rectangle is

a) 3·4 m b) 3·8 m c) 7·6 m d) 4.2 m

89. If $25a^2 + 120kab + 36b^2$ be a perfect square, then the value of k is

a) $\frac{1}{2}$ b) 1 c) 2 d) $\frac{1}{4}$

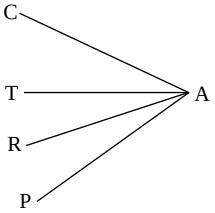
90. If $3x + \frac{1}{x} = 9$, then the value of $x^2 + \frac{1}{9x^2}$ is

a) $4\frac{1}{3}$ b) $8\frac{2}{3}$ c) $8\frac{1}{3}$ d) $2\frac{1}{3}$

91. If $a + b = 3$ and $a - b = 1$, then the value of $8ab(a^2 + b^2)$ is

a) 80 b) 88 c) 40 d) 20

92. How many pairs of adjacent angles are there in the given figure :



a) 2 b) 3 c) 4 d) 5

93. Supplement of complement of $\frac{2}{3}$rd of a right angle is

a) 120° b) 60° c) 150° d) 100°

94. If $a = \frac{p}{q} + \frac{q}{p}$ and $b = \frac{p}{q} - \frac{q}{p}$, then the value of $a^4 + b^4 - 2a^2b^2$ is

a) 4 b) 8 c) 32 d) 16

95. A train of length 200 m moving with uniform speed passes a post in 2 minutes. Moving with the same speed how long will it take to cross a platform of length 500 m ?

a) 8 minutes b) 7 minutes c) 5 minutes d) 6 minutes

96. The length and breadth of a rectangular room are 60m and 45m respectively. How many square tiles of maximum size will be needed to pave the floor of this room ?

a) 12 b) 24 c) 6 d) 36

97. The numbers 9, 16, 25, 36 follow a pattern. The seventh number of this series is

a) 72 b) 81 c) 100 d) 64

98. A rectangular garden of length 50m and of breadth 40 m. has a path 5m wide inside parallel to its four sides. The space without the path is kept for growing grass at the cost of Rs 5 per sq.m. The cost for this purpose is

a) Rs 6500 b) Rs 4000 c) Rs 6000 d) Rs 5000

99. Statement A : The area of four walls of a room = (length + breadth) × height

Statement B : The area of the ceiling of a room = length × breadth

Choose the correct option :

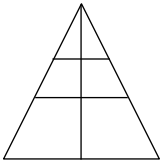
a) The statement A is wrong but the statement B is correct.

b) The statement A is right but the statement B is wrong.

c) Both of these statements are wrong.

d) Both of these statements are correct.

100. In the given figure, the number of triangles is



a) 7 b) 8 c) 9 d) 6