All India Science Teachers' Association, West Bengal

SCIENCE APTITUDE AND TALENT SEARCH TEST - 2023

Time : 2 hr. 30 min. **Full Marks : 100**

Class VIII

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 part of cell from which Golgi bodies are formed is
   a) ribosome b) lysosome
   c) endoplasmic reticulum d) cytoplasm
2. An example of a kharif crop is
   a) mustard b) maize c) wheat d) pea
3. The correct one from the following statements is
   a) both animal cells and plant cells have cell wall
   b) every living cell contains a single nucleus
   c) ribosomes are seen only in eukaryotic cells
   d) there are no membrane-bound cell organelles present in prokaryotic cells

4. In case of stock and scion used in grafting, quality of
   a) scion is better than that of stock
   b) stock is better than that of scion
   c) any one can be better than the other
   d) both are identical
5. During curd production the carbohydrate present in milk transforms into
   a) acetic acid b) ethanol c) lactic acid d) lactose
6. The DOTS method is used to treat
   a) kala-azar b) pox c) hepatitis d) tuberculosis
7. The source of curcumin is
   a) turmeric b) cardamom c) ginger d) garlic
8. The incorrect pair from the following is
   a) mucilage - cactus b) aerenchyma - sundari
   c) mesosome - bacteria d) chloride cell - marine fish
9. Jute fibres can be separated easily from the stems when the jute plants are immersed in water for several days. This happens because
   a) fungi present in water partially decompose the jute fibres
   b) bacteria present in water decompose pectin present in the cell wall of jute stem
   c) jute stems rot by themselves when kept in water
   d) jute fibres become soft after keeping in water
10. The gland whose extract is used in artificial culture of fish is
    a) thyroid b) testis c) ovary d) pituitary
11. Underwater forest in the shallow parts of ocean is created by
    a) kelp b) diatom
    c) phytoplankton d) dinoflagellate
12. The hormone responsible for fight or flight response is
    a) thyroxine b) insulin c) adrenaline d) oestrogen
13. The incorrect statement about organic manure is that it
    a) makes soil porous
    b) decreases water retention capacity of soil
    c) increases the number of beneficial microbes in soil
    d) increases water retention capacity of soil

14. Volvox is a type of
    a) unicellular fungus b) multicellular alga
    c) filamentous fungus d) colonial algae
15. Plants adapted to dry environments with low rainfall are known as
    a) halophytes b) mesophytes c) xerophytes d) hydrophytes
16. Cristae is related to the organelle
    a) mitochondria b) cytoplasm c) plastid d) centrosome
17. The main components of honey are
    a) maltose and dextrose b) fructose and maltose
    c) glucose and fructose d) glucose and galactose
18. The animal carrying the microbe responsible for dengue is
    a) anopheles mosquito b) culex mosquito
    c) aedes mosquito d) housefly
19. Names of some plants and some components derived from plants are given below. The correct pair is
    a) sarpagandha - reserpine b) mint - piperine
    c) nayantara - alicin d) neem - azadirachtin
20. Giardiasis is caused by a
    a) protozoa b) bacteria c) virus d) fungus
21. The fish, not a major carp, is
    a) rohu fish b) katla fish c) bata fish d) kalbos fish
22. Sundarban is
    a) a national park b) a sanctuary
    c) a biosphere reserve d) both a and c
23. An antibiotic derived from a fungus is
    a) penicillin b) tetracycline c) erythromycin d) neomycin
24. Golden rice contains a large amount of vitamin
    a) C b) A c) D d) K
25. Meaning of the word malaria is
    a) bad water b) bad soil c) bad air d) bad food

26. The bacteria that can survive at a temperature close to 100°celsius are known as

a) mesophilic b) thermophilic c) cryophilic d) barophilic

27. Names of some diseases are in column A and names of some medium of transmission are in column B. Correct matching of the items from two columns is

A	B
A. diarrhea	(i) air
B. influenza	(ii) vector
C. AIDS	(iii) water
D. plague	(iv) blood

a) A– (iii), B – (i) C – (iv), D – (ii)
b) A – (i), B – (iii), C – (ii), D – (iv)
c) A – (ii), B – (iv), C – (iii), D – (i)
d) A – (iv), B – (ii), C – (i), D – (iii)

28. Nitrifying bacteria converts

a) nitrate to free nitrogen

b) protein to ammonia

c) free nitrogen to nitrogenous compound

d) ammonia to nitrate

29. Diabetes is caused by the deficiency of insulin hormone. It can also be caused by deficiency of

a) iodine in food b) lack of adequate sleep

c) physical exercise d) adequate water in body

30. The state animal of West Bengal is

a) wild cat b) fishing cat

c) gangetic dolphin d) royal Bengal tiger.

31. Weight is measured by

a) common balance b) spring balance

c) barometer d) calorimeter

32. S.I. unit of force is

a) dyne b) kilogram c) Newton d) gram

33. If Gravitational acceleration on the Earth is g, on Moon it will be nearly

a) g b) g/2 c) 6/g d) g/6

34. Prime neutral particle in atom is

a) proton b) neutron c) electron d) meson

35. For critical angle of incidence of a light ray, the angle of refraction is

a) 90° b) 45° c) 30° d) 60°

36. Atomic number is

a) number of protons b) number of neutrons

c) number of protons plus neutrons d) number of proton plus electron

37. Vaporization of liquid by boiling is called

a) evaporation b) boiling c) melting d) condensation

38. For a freely falling body, velocity of the body

a) decreases with time

b) increases with time

c) remains unchanged

d) increases at first then decreases

39. Ratio of 1Å and 1m is

a) 10^{-8} b) 10^{-10} c) 10^{8} d) 10^{10}

40. The radiation(s) in sunlight causing heating effect when absorbed in our body is (are)

a) ultraviolet radiation b) infra-red radiation

c) common light d) all of a) to c)

41. The tip of pencil is made up of

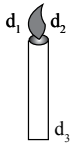
a) coke b) lead c) graphite d) diamond

42. Teflon is used in making

a) water-pipes b) non-stick utensils

c) gumboot d) raincoat

43. A candle is burning. The densities of air on left side and right side of the flame and in the lower part of the candle are d_1, d_2 and d_3 respectively. Then



a) $d_1 > d_2 = d_3$ b) $d_1 = d_2 = d_3$
c) $d_1 = d_2 < d_3$ d) $d_1 = d_2 > d_3$

44. The addition of oxygen to an element or to a compound is called—
a) reduction b) electrolysis c) oxidation d) neutralisation

45. The chemical formula of the poisonous gas produced by incomplete combustion of carbon is
a) CO b) CO_2 c) NH_3 d) O_3

46. If a light ray is incident normally on a plane mirror, then angle of reflection will be—
a) 0° b) 90° c) 120° d) 180°

47. Temperature of 100g ice is 0°C. P unit heat is required to transform it to water of 0°C. 100g water in a different pot is in 100°C. Q unit heat is required to transform it to steam at 100°C. Ratio Q/P is
a) 1 : 1 b) 3 : 1 c) 5 : 4 d) 27 : 4

48. When 3N force is applied on a particle causing a displacement of 12 m in the direction of force, the amount of work done is
a) 36 J b) 15 J c) 9 J d) 4 J

49. Mirage is seen in summer noon. Its formation is explained by using the property of light named
a) refraction b) reflection
c) dispersion d) total internal reflection

50. Body temperature of a person is 104°F. In Celsius scale the temperature will be
a) 40.0° b) 40.6° c) 40.9° d) 42.0°

51. When solid NH_4Cl is heated it is converted to its gaseous state. This is a process of
a) distillation b) partial distillation
c) sublimation d) filtration

52. The gas with pungent odour, that we smell in urinal is

a) H_2S b) NH_3 c) O_2 d) N_2

53. When a colourless gas comes in contact with oxygen in air, it produces brown coloured nitrogen dioxide gas. The colourless gas is

a) O_2 b) N_2 c) NO d) Cl_2

54. Sugar becomes black coloured Carbon when it is heated. The formula of the compound released during the process is

a) NH_3 b) H_2O c) H_2 d) O_2

55. A white compound is formed when magnesium ribbon is heated in presence of air. The formula of the white compound is

a) MgO b) Mg_3N_2 c) $MgCO_3$ d) Mg

56. Which one of the following is unable to conduct electricity ?

a) Hg b) Ga c) Cs d) Br_2

57. When baking soda and NH_4Cl are rubbed together a gas with pungent odour is formed. The name of the gas is

a) oxygen b) ammonia c) nitrogen d) nitrogen dioxide

58. Reaction of some pieces of Zinc and dil H_2SO_4 produces a gas which burns in blue flame. The name of the gas is

a) hydrogen b) oxygen c) carbon dioxide d) nitrogen

59. An allotrope of carbon is a good conductor of heat but bad conductor of electricity. The allotrope is

a) graphite b) diamond c) lamp black d) coke

60. An element is easy to cut by knife and it is a good conductor of electricity. The element is

a) Fe b) Cu c) S d) Na

61. Aquous solution of an oxide changes red litmus solution to blue solution. The oxide is formed from the element

a) Mg b) C c) S d) P

62. A metal is unable to produce H_2 gas when dilute HCl is added to it. The metal is

a) Fe b) Mg c) Zn d) Cu

63. When an iron nail is dipped into a solution of Copper Sulphate, a brown precipitate is found on the iron nail. Because

a) iron is more active than copper

b) iron is less active than copper

c) colour of copper sulpate is brown

d) colour of ferrous sulphate is brown

64. Which element is not present in stainless steel ?

a) iron b) chromium c) carbon d) aluminium

65. ${}^{2}_{1}H$, ${}^{3}_{1}H$, both are istope to each other. Because number of protons and neutrons in them are respectively

a) same and same b) same and different

c) different and different d) different and same

66. Which one of the following is amphoteric oxide ?

a) SO_2 b) ZnO c) N_2O_5 d) MgO

67. Valencies of Mg and Cl in the compound $MgCl_2$ are respectively

a) 1 and 2 b) 2 and 1 c) 1 and 1 d) 2 and 2

68. Number of Covalent bond(s) in the compound NCl_3 is

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

69. There is no reaction when dry baking soda and tartaric acid are mixed. But reaction starts when small amount of water added to the mixture. In this reaction activator is

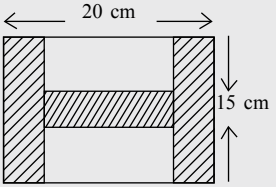
a) dry baking soda b) water

c) tartaric acid d) air

70. Which one of the following is used as catalyst in the laboratory preparation of oxygen ?

a) Fe_2O_3 b) Fe_3O_4 c) MnO d) MnO_2

71-72.



In the given figure the shaded portion is 2 cm broad all along.

71. The area of the shaded portion is

a) 96 sq.cm b) 102 sq.cm c) 82 sq.cm d) 92 sq.cm

72. The area of the unshaded portion is

a) 208 sq.cm b) 210 sq.cm c) 108 sq.cm d) 110 sq.cm

73. If $a-\frac{1}{a}=P$ then $a^4+\frac{1}{a^4}=$

a) $P^4 + 2P^2 + 2$ b) $P^4 + 4P^2 + 2$

c) $P^4 + 2$ d) $P^4 + 4P^2 + 1$

74. One factor of $4b^2c^2 - (b^2 + c^2 - a^2)^2$ is

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

75. If x and y be two positive integers and $x^2 - y^2 = 28 \times 6$, then one value of y will be

a) 7 b) 11 c) 14 d) 21

76. If $\frac{1}{2}(x+2)+\frac{1}{3}(x+3)=\frac{1}{4}(x+4)+\frac{1}{5}(x+5)$ then value of x is

a) 2 b) 1 c) 0 d) 3

77-78. Among 40 students of a class the number of students who can sing, dance and recite is 15, 5 and 20 respectively. Their classification is shown in a pie diagram. Then

77. The portion of the Pie-chart showing the number of students who can recite, makes an angle at the centre of the Pie-chart is

a) 190° b) 150° c) 180° d) 200°

78. The part of the area of the pie chart that will be occupied by the number of students who can sing and dance together is

a) 70% b) 40% c) 60% d) 50%

79. The correct relation is

a) $a \div (b \div c) = (a \div b) \div c$ b) $(a \times b) \times c = a \times (b \times c)$

a) $a - (b - c) = (a - b) - c$ d) $(a + b) \times c = a + bc$

80. The simplified value of $(x - y)(x^2 + xy + y^2) + (y - z)(y^2 + yz + z^2) + (z - x)(z^2 + zx + x^2)$ is

a) 0 b) $x^3 + y^3$ c) $x^3 - y^3$ d) 1

81. The sum of the perfect cube numbers lying between 5 and 130 is

a) 124 b) 214 c) 234 d) 224

82. The length, breadth and height of a rectangular parallelopiped are 6 cm, 4 cm and 4 cm respectively. The minimum number of such parallelopipeds needed to make a big cube is

a) 12 b) 18 c) 24 d) 9

83-87	**Column-A**	**Column-B**
1.	Three angles are equal to one another	p) Obtuse angled triangle
2.	The number of acute angles is two	q) Trapezium
3.	Only one pair of opposite sides are parallel	r) Rectangle
4.	Each angle measures 90°	s) Rhombus
5.	Diagonals bisect each other at right angles	t) Isosceles triangle
		u) Equilateral triangle

When these two columns are compared, the correct relation is

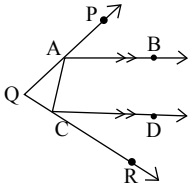
83. a) 1)→p) b) 2)→t) c) 3)→s) d) 5)→s)

84. a) 4)→r) b) 1)→p) c) 2)→t) d) 3)→s)

85. a) 1)→p) b) 3)→q) c) 2)→t) d) 4)→s)

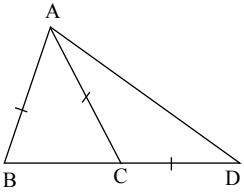
86. a) 1)→t) b) 3)→r) c) 2)→p) d) 4)→s)

87. a) 1)→t) b) 3)→r) c) 5)→r) d) 1)→u)

88. 

In the given figure AB || CD, ∠PAB = 30°, ∠PAC = 160° and ∠RCD = 50°. Then the measure of ∠AQC is

a) 80° b) 70° c) 90° d) 60°

89. 

In the given figure, AB = AC = CD and ∠ADC = 30°.

Then the measure of ∠BAC is

a) 80° b) 50°

c) 60° d) 70°

90. Statement A : To cultivate a land at a fixed time the number of tractors of equal power needed is directly proportional to the area of the land.

Statement B : To cultivate a land with tractors of equal power, the number of days needed is directly proportional to the area of the land but is inversely proportional to the number of tractors.

a) Both the statements are correct

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

c) Statement A is wrong but the statement B is right

d) Both the statements are wrong

91. In a parliamentary constituency the number of votes cast is 70% of the total number of voters. The winning candidate has got 60% of the votes cast. The part of the total number of voters cast votes in favour of the defeated candidate is

a) 38% b) 28% c) 18% d) 30%

92. In a mixture the ratio of the volumes of syrup to water is 2 : 1. What part of this mixture be withdrawn and equal quantity of water will be mixed to the remaining mixture to get the ratio of the volumes of syrup to water as 2 : 3 is

a) $\frac{2}{5}$ b) $\frac{3}{5}$ c) $\frac{1}{5}$ d) $\frac{2}{3}$

93. One factor of $a^2 + ax - (6x^2 - 5xy + y^2)$ is

a) $(a + 3x - y)$ b) $(a - 3x - y)$

c) $(a + 3x + y)$ d) $(a + 2x + y)$

94. The common factor of $a^3 - 8$, $a^3 - 4a^2 + 4a$ and $a^2 + a - 6$ is

a) $a - 8$ b) $a + 2$ c) $a - 2$ d) $a + 4$

95. The value of $\frac{\frac{x}{x-a}+\frac{y}{y-a}+\frac{z}{z-a}}{\frac{3}{a}+\frac{1}{x-a}+\frac{1}{y-a}+\frac{1}{z-a}}$. is

a) 1 b) a c) $\frac{1}{a}$ d) $x + y + z$

96. In the triangle ABC, $\angle B = 70°$. The bisectors of $\angle A$ and $\angle C$ meet at O. The measure of $\angle AOC$ is

a) 115° b) 120° c) 125° d) 135°

97. If $= \frac{n(n+1)(2n+1)}{6} = 1^2 + 2^2 + 3^2 + \cdots + (n-1)^2 + n^2$ where n is a positive integer with its help the sum of $4^2 + 5^2 + 6^2 + \cdots + 20^2$ is

a) 2756 b) 2628 c) 1938 d) 2856

98. 1729 is called Hardy - Ramanujan number. It is the smallest number that can be expressed in two ways as the

a) sum of the cubes of two positive integers

b) sum of the squares of two positive integers

c) difference of the cubes of two positive integers.

d) difference of the squares of two positive integers.

99. In the graph, a point lying on X-axis is

a) (–1, –1) b) (1, 1) c) (1, 0) d) (0, 1)

100. If $(x-1)^2 + (y-2)^2 + (z-3)^2 = 0$, then the value of $(x + y + z)$ is

a) 5 b) 6 c) 14 d) 0

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