All India Science Teachers' Association, West Bengal
SCIENCE APTITUDE AND TALENT SEARCH TEST - 2025

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

Class - X

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. Transverse phototrophic movement of a plant can be seen in

a) stem b) leaf c) root d) bud

2. Among the following the one which is not a refractory medium of an eye is

a) lens b) vitreous humour

c) pupil d) aqueous humour

3. The simple reflex action is

a) if some thing is taken too close to eyes quickly, the eyes close.

b) to tie shoelaces while talking as well as looking at others.

c) mouth watering in presence of some delicious foods.

d) to climb stairs in the dark

4. The hormone steroid in nature is

a) thyroxine b) oestrogen c) insulin d) glucagon

5. Type of the chromosome in col. (I) and their shapes in col. (II) are given. The correct combination of the two columns is

Col. (I)	Col. (II)
A. Acrocentric	(i) 'V'
B. Submetacentric	(ii) 'L'
C. Telocentric	(iii) 'J'
D. Metacentric	(iv) 'I'

a) A - (i) B - (iii) C - (ii) D - (iv)

b) A - (iii) B - (iv) C - (i) D - (ii)

c) A - (iii) B - (ii) C - (iv) D - (i)

d) A - (iv) B - (iii) C - (ii) D - (i)

6. If Mother is the carrier of haemophilia (x^{h+} x^{h}) and father is normal (x^{h+} y), then the result will be

a) all daughters will be normal.

b) half of the sons will be normal and half of the daughters will have haemophilia.

c) all daughters will be carrier.

d) 'a' and 'b' will be correct

7. Exception of Mendel theory is

a) linkage b) co-dominance

c) incomplete dominance d) all from 'a' to 'c'

8. Prothallus is seen in the life cycle of

a) mucor b) spirogyra c) fern d) pogonatum

9. Fish : myotome muscle : : Euglena : X

On the basis of first pair relationship, 'X' will be

a) leg b) setae c) pseudopodia d) flagella

10. If the chromosome number of a plant's spore mother cell is 22, then the chromosome number of its endosperm cell will be

a) 22 b) 11 c) 55 d) 33

11. The correct statement related to the wings of bats and birds will be

a) they are homologous organs but not analogous organs.

b) they are neither homologous nor analogous organs.

c) they are both homologous and analogous organs.

d) they are analogous organs but not homologous.

12. On the basis of reproduction the dissimilar one is

a) fission b) budding c) grafting d) regeneration

13. The differential component between nucleotide and nucleoside is

a) pentose sugar b) nitrogen base

c) phosphate group d) peptide bond

14. A wind pollinated plant is

a) mango b) vallisneria c) paddy d) silk cotton

15. The genotypes that denote the wrinkled yellow phenotype of pea plants are

a) RRYY and rryy b) RRYy and RrYy

c) RRyy and Rryy d) rrYY and rrYy

16. Haemophilia 'A' disease is caused by deficiency of

a) factor VIII b) factor V c) factor IX d) factor XII

17. Assertion (A) : Vestigial organs are degenerated and functionless.

Reason (R) : Although the organs were active in their ancestral form but now becomes less important in today's changing life style.

Read (A) and (R) then select correct option.

a) Both (A) and (R) are true and (R) is a correct explanation of Assertion (A)

b) Both (A) and (R) are true but Reason (R) is not a correct explanation of Assertion (A)

c) (A) is true but (R) is false

d) (A) is false but (R) is true

18. The unit of evolution is

a) ontogeny b) population c) species d) subspecies

19. In a monohylorid cross on a red and white coloured flower of evening primrose plant, the phenotypic ratio obtained in the F_2 generation is

a) 3 : 1 b) 1 : 2 : 1 c) 9 : 3 : 3 : 1 d) 1 : 3

20. In angiosperm plants male gametes are produced through

a) meiotic division of somatic cells.

b) mitotic division of somatic cells.

c) meiotic division of spore mother cells.

d) mitotic division of germ mother cells.

21. The correct sequence of reflex pathway of a reflex action is

a) receptor → efferent nerve cell → nerve center → afferent nerve cell → effector organ

b) receptor → afferent nerve cell → nerve center → efferent nerve cell → effector organ

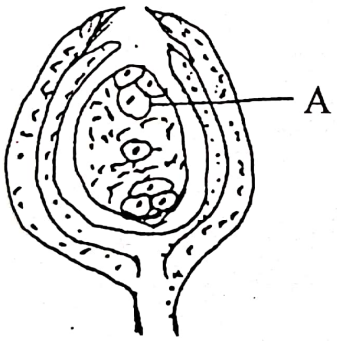
c) effector organ → nerve center → efferent nerve cell → receptor → afferent nerve cell

d) nerve center → effector organ → receptor → efferent nerve cell → afferent nerve cell

22. In cryopreservation, the plant specimens are preserved at

a) 0°C b) – 196°C c) – 1°C d) – 5°C

23.



The part marked 'A' in the above diagram is

a) definitive nucleus b) antipodal cell

c) ovum d) synergid

24. In the following, 'In-situ' conservation process is

a) national park b) botanical garden

c) zoological garden d) science laboratory

25. Manas, Sundarbans and Simlipal are

a) national park b) biosphere reserve

c) sanctuary d) reserve forest

26. Regarding biodiversity the odd one is

a) Japan b) Indoburma

c) Himalayas d) Western Ghat and Sri Lanka

27. The gas used in Miller and Urey's experiment was

a) oxygen b) carbon-di-oxide c) methane d) acetylene

28. Maximum evidence about evolution is obtained from

a) fossil b) vestigial organ

c) embryo d) morphology

29. The sperm of human body is denoted as

a) 22A + X b) 22A + Y c) 2n d) 44A + XY

30. The condition for formation of an 'Algalbloom' is

a) increase of SPM b) increase of greenhouse gas

c) increase of intensity of sound d) eutrophication

31. The coefficient of volume expansion of water is negative at the temperature range

a) 273 K - 277 K b) 278 K - 287 K

c) 300 K - 310 K d) 363 K - 373 K

32. If the temperature of a metal rod of length 3m is increased by 2°C, its length is increased by 66×10^{-6} m. Coefficient of linear expansion of the material of that rod (in per degree Celsius unit) is

a) 9×10^{-6} b) 10×10^{-6} c) 11×10^{-6} d) 12×10^{-6}

33. Amount of heat produced in calorie by complete conversion of 1 J to work is approximately

a) 4.2 b) 0.24 c) 0.42 d) 0.024

34. The value of co efficient of thermal conductivities of perfect conductor and ideal insulator respectively in $cal.cm^{-1}.°C^{-1}.s^{-1}$ are

a) infinity and zero
b) zero and infinity
c) one and infinity
d) zero and one

35. A and B are standing 1 km apart form each other. A fires a shot and B observes a flash of fire immediately but hears the sound of the shot after 2.5 s. The velocity of sound in air in m/s unit is

a) 330 b) 340 c) 350 d) 400

36. A jet plane is flying with supersonic speed. Its Mach number is

a) 0 b) greater than 1 c) less than 1 d) equal to 1

37. Examples of application of reflection of sound are

a) SONAR, tuning fork
b) USG, X-ay
c) stethoscope, SONAR
d) USG, MRI

38. A metal has Young Modulus Y, Density d, Thermal Conductivity K and Atomic weight A. To find the velocity of sound in a rod made of this metal we require

a) Y, d b) Y, K c) K, A d) Y, A

39. Number of molecules present in 10 (ten) moles of H_2S gas is

a) 60.22×10^{23}
b) 6.022×10^{23}
c) 0.6022×10^{23}
d) 7.5×10^{23}

40. If oxygen obeys perfect gas law, equation of the state of 8g of oxygen (using standard symbols) is

a) $PV = RT/8$ b) $PV = 8RT$ c) $PV/2 = RT$ d) $PV = RT/4$

41. In alternating current, charges

a) move from negative to positive terminal
b) move from positive to negative terminal

c) do not move at all d) vibrate only

42. The magnitude and direction of the velocity of the molecules of ideal gas are respectively

a) zero to infinity, outward, w.r.t. the vessel

b) zero to infinity, in any direction

c) 3×10^{10} ms^{-1}, in any direction

d) $332ms^{-1}$, towards low pressure

43. Colour of live wire connected with MCB is

a) blue b) green c) brown d) black

44. Linear magnification of a virtual image created by a convex lens is

a) > 1 b) < 1 c) $= 1$ d) ≤ 1

45 Refractive index of water with respect to air is 4/3 for a particular colour of light. If the wavelength of that light in air be 4800 Angstrom, its wavelength in water in the same unit will be

a) 1200 b) 2400 c) 3600 d) 6000

46. Relation between the angle of incidence (i) and angle of reflection (r) in case of reflection in concave mirror is

a) $i > r$ b) $i < r$ c) $i = r$ d) $i + r = 90°$

47. Number of electrons having charge 20 coulombs is

a) 6.25×10^{19} b) 12.5×10^{19}

c) 6.25×10^{20} d) 12.5×10^{20}

48. Of the materials mentioned below, the value of resistivity is maximum in case of

a) superconductor b) semiconductor c) insulator d) conductor

49. Two resistances are connected in parallel combination. If the ratio of the two resistances is 1 : 2, the ratio of power consumptions by them is

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

50. Working principle of DC generator is based on

a) electromagnetic induction b) chemical effect of current

c) magnetic effect of current d) heating effect of current

51. The mass of 5.6 L oxygen gas at STP is

a) 32 g b) 8 g c) 16 g d) 24 g

52. The correct order of electronegativity of F, I, Br, Cl is

a) F > Cl > Br > I b) F < Cl < Br < I

c) I < F < Br < Cl d) I > Cl > Br > F

53. The triple bonded organic compound is

a) C_2H_4 b) C_2H_6 c) C_2H_2 d) C_4H_{10}

54. The water insoluble covalent compound is

a) sugar b) urea c) ethanol d) benzene

55. If Nessler's reagent is mixed with ammonia solution, the colour of the precipitate will be

a) blue b) red c) green d) brown

56. The weak electrolyte compound is

a) NaOH b) NH_4OH c) Na_2CO_3 d) NH_4Cl

57. The 'oil of vitriol' is

a) HNO_3 b) CH_3COOH c) H_2SO_4 d) HCl

58. The ratio of Fe_2O_3 and Al powder in thermite mixture is

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

59. One component of amalgam will always be

a) iron b) gold c) tin d) mercury

60. The compond that turns wet lead acetate paper into black is

a) NH_3 b) H_2S c) O_2 d) H_2

61. The element used as an anode for gold plating on silver spoon is

a) Pt b) Ag c) Au d) Cu

62. The element with the highest first ionization potential is

a) B b) N c) O d) Be

63. Of the following the compound on which octave rule is inapplicable, is

a) NaCl b) KCl c) LiH d) CaO

64. Of the following, the two elements that form covalent bond between each other are

a) K and Cl b) P and Cl

c) Ca and Cl d) Na and Cl

65. When H_2S gas is passed through an alkaline aqueous solution of sodium nitroprusside, the colour of the solution will be

a) violet b) orange c) green d) red

66. The element not present in german silver alloy is

a) Cu b) Zn c) Ni d) Ag

67. The compound used to dry ammonia gas is

a) CaO b) anhydrous $CaCl_2$ c) concentrated H_2SO_4 d) P_2O_5

68. The correct electronic configuration of an alkali metal is

a) 2, 8 b) 2, 8, 2 c) 2, 8, 1 d) 2, 8, 8

69. The compound in which both ionic and covalent bond are present, is

a) NH_4Cl b) $CaCO_3$ c) CCl_4 d) $CaCl_2$

70. The catalyst used in contact process for industrial preparation of sulphuric acid is

a) iron fillings b) molybdenum

c) nitrous oxide d) vanadium pentoxide

71. The time-period of a simple pendulum varies directly as the square root of its effective length. If the time-period of a simple pendulum of effective length L be T, the time-period of a simple pendulum of effective length 4 L will be

a) T b) 4T c) 2T d) T/2

72. Deepak, Samir and Rahul started a business investing a total sum of Rs 10000. At the end of the year Deepak, Samir and Rahul got Rs. 100, Rs 150 and Rs. 250 respectively as their profit. Samir invested in the business

a) Rs. 5000 b) Rs. 3000 c) Rs. 2000 d) Rs. 4000

73. If two different circles neither touch nor intersect each other, the maximum number of common tangents that can be drawn to them is

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

74. If the difference of the squares of the roll numbers of two students in a class be 77, the roll number of one student will be

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

75. Due to anti-smoking campaign if the number of smokers decreases by 10% every year and the present number of smokers in a city be 590490, the number of smokers in the city 5 years ago was

a) 200000 b) 2000000 c) 100000 d) 1000000

76. The point of intersection of the straight line $2x + 3y = 12$ and the y-axis is

a) (0, 4) b) (4, 0) c) (0, 6) d) (6, 0)

77. If $3^x - 3^{x-1} = 18$, the value of x^x is

a) 36 b) 42 c) 27 d) 81

78. The next number of the series 3, 5, 9, 17, 33, 65 ..... is

a) 126 b) 128 c) 127 d) 129

79. A path 7 m broad encircles a circular field. If the area of the path be equal to the area of the circular field, the radius of the field is

a) $\sqrt{7}\ (\sqrt{2} + 1)$ m b) $7\ (\sqrt{2} + 1)$ m

c) $7\ (\sqrt{2} - 1)$ m d) $\sqrt{7}\ (\sqrt{2} - 1)$ m

80. If $(2x - 5)^2 + (3y - y)^2 = 0$, the value of $(4x + 6y)$ is

a) 24 b) 30 c) 14 d) 12

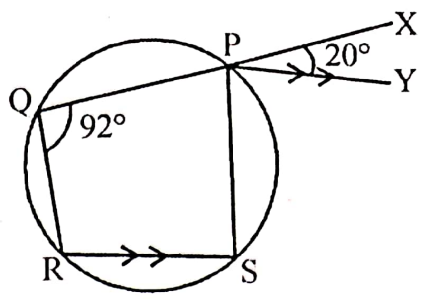
81. If the number of diagonals of a polygon be 9, the number of sides of the polygon is

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

82. If $(7x - 1 / 11y) = 21$, the value of $(11x - 1/7y)$ is

a) 30 b) 33 c) 36 d) 77

83. In the adjoining figure, PQRS is a cyclic quadrilateral. QP is extended to X. If RS || PY, $\angle$ PQR = 92° and $\angle$ XPY = 20°, then the value of $\angle$ QRS is



a) 20° b) 88° c) 108° d) 72°

84. If the simple interest of a sum for t years at the rate of t% per annum be Rs t, then the principal is

a) Rs t b) Rs 100t c) Rs (100/t) d)RS ($100/t^2$)

85. The centre of two concentric circles is O. A straight line intersects one circle at the points X & Y and it intersects the other circle at the points M & N. If XY = 30 cm and XM = 10 cm, MN is equal to

a) 4 cm b) 10 cm c) 8 cm d) 5 cm

86. If the total length of the edges of a cube be 36 cm, its volume in c.c unit is

a) 54 b) 36 c) 27 d) 9

87. If $x + (1/x) = -2$, the value of $x^{3000} - (1/x^{109})$ is

a) 2 b) 1 c) 0 d) – 2

88. If pqx = qry = rpz, the value of x : y : z will be

a) p : q : r b) r : p : q c) $p^2 : q^2 : r^2$ d) q : r : p

89. $(2 - 3x - 4x^2)$ will assume maximum value if x is equal to

a) – 3 b) – (3/2) c) – (3/4) d) – (3/8)

90. In Δ XYZ, M and N are two points on the sides XY and XZ respectively such that MN || YZ and XM : MY = 2 : 3. If XN = 4 cm, the length of XZ will be

a) 10cm b) 15 cm c) 20 cm d) 12 cm

91. In a tent in the shape of a right circular cone 11 persons may stay. Each person need 4 sq.m of area on the ground and 20 cu.m of air to breathe. The height of the tent in metre unit will be

a) 10 b) 15 c) 25 d) 30

92. Two circle touch each other externally at the point X. If the direct common tangent of the circles touch them at M and N respectively, then $\angle$ MXN is equal to

a) 30° b) 60° c) 90° d) 120°

93. The volumes of two solid cylinders are equal and the ratio of their heights is 2 : 3. The ratio of the lengths of their diameters is

a) $\sqrt{3} : \sqrt{2}$ b) $\sqrt{6} : \sqrt{3}$ c) $\sqrt{6} : \sqrt{2}$ d) $\sqrt{6} : 2$

94. If $x + y = 6$, the maximum value of xy is

a) 18 b) 36 c) 6 d) 9

95. If α and β are the roots of $ax^2 + bx + c = 0$, $a \neq 0$, then the value of $(1/\alpha^3) + (1/\beta^3)$ is

a) $(-b^3 + 3abc) / c^3$ b) $(-c^3 + 3ab) / a^3$

c) $(-a^3 + 3abc) / b^3$ d) $(-b^3 - 3abc) / c^3$

96. If the area of curved surface and the volume of a solid sphere are S and V respectively, then the value of (S^3 / V^2) is

a) $1 : 18\pi$ b) $18\pi : 1$ c) $36\pi : 1$ d) $1 : 36\pi$

97. The ratio of the areas of the circum-circle and the in-circle of an equilateral triangle is

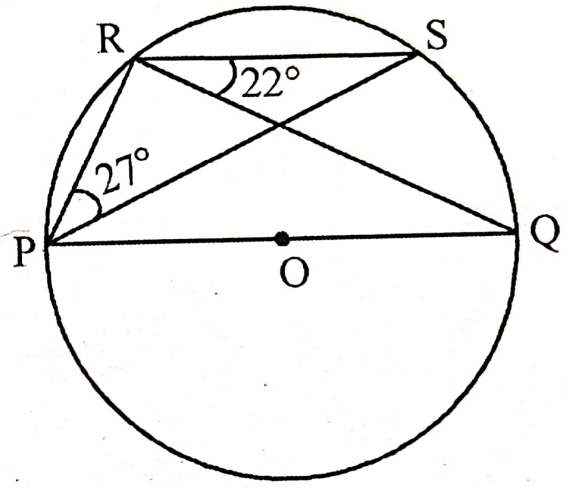
a) 2 : 1 b) 4 : 1 c) 9 : 1 d) 16 : 1

98. The value of $\sqrt{12+\sqrt{12+\sqrt{12+.....\infty}}}$ is

a) 12 b) 3 c) 4 d) 144

99. In the adjoining figure,

O is the centre of the circle and PQ is a diameter of it. If $\angle$ RPS = 27° and $\angle$ QRS = 22° then the value of $\angle$ PSR is



a) 45° b) 43°

c) 47° d) 41°

100. The correct relation in the following is

a) $(\sqrt{11}+\sqrt{3}) = (\sqrt{8}+\sqrt{6})$ b) $(\sqrt{11}+\sqrt{3}) > (\sqrt{8}+\sqrt{6})$

c) $(\sqrt{11}+\sqrt{3}) < (\sqrt{8}+\sqrt{6})$ d) $(\sqrt{5}+\sqrt{3}) < (\sqrt{6}+\sqrt{2})$

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