All India Science Teachers' Association, West Bengal.
SCIENCE PRE-OLYMPIAD-2023
CLASS- VIII

Time: 3 hr Full Marks: 400

INSTRUCTIONS:

1) Write your name, class, name of school and roll number both at left and right side of the answer sheet. 2) In 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 ◯ b) ⊗ c) ◯ d). **1 marks will be awarded for each correct answer and 1 mark will be deducted for 1 wrong answer.** 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. Identifying character of nitrification in nitrogen cycle is formation of

a) ammonia by dissociation of protein of dead bodies of living organism

b) nitrite and then nitrate from ammonia

c) ammonia from nitrate d) nitrogen from nitrate

2. A is a medicine that stops the growth of disease causing microorganism. This A is

a) antacid b) antiprotein c) antibiotic d) androgen

3. Two microorganisms M and N are helpful for fermentation of rice idli and dosa batter. M and N are respectively

a) bacteria and algae b) bacteria and yeast c) protozoa and algae (d) yeast and algae

4. Restocking of destroyed forest by planting new trees of the same specis is called

a) deforestation b) aforestation c) desertification d) reforestation

5. The species whose existence is under threat but available in nature in sufficient number so that it would not extinct soon is called

a) endangered b) extinct c) rare d) vulnerable

6. Complex marine ecosystem with huge biodiversity is formed by

a) Kelp b) Krill c) Diatom d) Coral

7-10. Bioluminescence is a feature exhibited by some animals living in deep sea.

7. This feature is due to a typical change that may be called

a) physical b) chemical c) organic d) decomposition

8. It is very common among

a) protozoans b) platyhelminthes c) cnidarians d) mollusca

9. In this process luciferin combines with

a) O_2 b) N_2 c) H_2O d) CO_2

10. The enzymes that catalyzes the process is

a) lypase b) dipeptydase c) luciferase d) amylase

11. The mismatch items of the following is

a) leucoplast-starch storage b) mitochondria-protein synthesis

c) chloroplast-grana d) centriole-microtubule organizing centre

12. Which one of the following is possessed only by some bacteria, not by eukaryotes?

a) Capsule b) Flagella c) Cytoskeleton d) Centriole

13. In which one of the following groups all have membranes?

a) Cytoplasm, Nucleus, Starch grains b) Nucleus, Mitochondria, Mesosome

c) Starch grains, Cytoplasm, Mesosome d) Mitochondria, Cytoplasm, Chloroplast

14. Non-degradable pollutants

a) not only accumulate but often they are biologically magnified also with their subsequent movement in food chain

b) are not cycled in ecosystem naturally

c) are less abundant in nature d) both a and b

15. PAN stands for

a) Prime Added Nature b) Peroxy Acetyl Nitrate

c) Principle of Advanced Nutrition d) Presume Additional Noise

16. Diffusion of solvent molecules into the solution through a semipermeable membrane is called

a) turgor pressure b) absorption c) osmosis d) plasmolysis

17. Nucleolus are rich only in

a) DNA b) RNA c) DNA and RNA d) DNA, RNA and protein

18. Gamete normally contain only one set of chromosomes. This set is called

a) aneuploidy b) haploid c) nullisomic d) diploid

19. Oxidative breakdown of synthetic or natural organic substances by microbial activity is called

a) denudation b) biodegradation c) biomagnification d) accumulation

20. X is freely suspended plant and Y microscopic animals feeding on X. Here X and Y are respectively

a) phytoplankton, zooplankton b) blue green algae, diatom

c) primary consumer, secondary consumer d) phytoplankton, diatom

21. See the diagrams A and B. Both are similar because they

a) are blood corpuscles

b) are free living organisms

c) have pseudopodia

d) fight against germs

22. The stage of the embryo in which all body parts can be identified is called

a) foetus b) larva c) pupa d) both a and b

23. A. Sanctuary, B. National Park, C. Biosphere Reserve, D. Aquarium

Which one of the above is mismatch in the field of conservation?

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

24. The different one among the following is

a) fermentation b) budding c) binary fission d) fragmentation

25. Diabetes Insipidus is due to

a) hyposecretion of ADH b) hyposecretion of ACTH

c) hypersecretion of GH d) hypersecretion of TSH

26. Mercury poisoning produced a crippling and often fatal disease called

a) blacklung b) goitre c) iti-iti d) minamata

27. Find correct match of items of column X and Column Y.

Column X	Column Y
A. Cell theory	1. Robertson
B. Chromosome	2. Schleidanand Schwann
C. Model of Plasma membrane	3. Benda
D. Mitochondria	4. Waldeyer

	A	B	C	D
a)	1	2	3	4
b)	2	3	1	4
c)	2	4	1	3
d)	4	2	3	1

28. The enzyme available in insectivorous plants are called

a) proteolytic b) specific malic c) alanine amino transferase d) sucrase

29. Herbivores are

a) secondary consumer b) primary consumer c) tertiary consumer d) autotrophs

30. Metamorphosis in a frog is controlled by

a) adrenaline b) melanine c) thyroxine d) both a and c

31. The acid formed by dissolving sulphur dioxide in water is

a) sulfonic acid b) sulphurous acid c) thiosulphurous acid d) sulphuric acid

32. The two substances which cause blue litmus paper to turn red are

a) lubricating grease and vinegar b) baking Soda and lemon juice

c) Vinegar and lemon juice d) Soap and lubricating grease

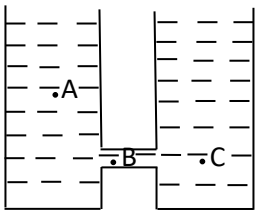
33. The metal that can displace copper from copper sulphate is

a) silver b) zinc c) platinum d) gold

34. The oxides which are acidic and amphoteric in nature are respectively

a) CaO and Na_2O b) Al_2O_3 and SO_2 c) SO_2 and ZnO d) K_2O and CO_2

35. A container is filled with water as shown in the given figure. If pressure of water at the points A, B, C be P_A, P_B, P_C,



a) $P_A > P_B > P_C$ b) $P_A < P_B = P_C$

c) $P_A > P_B = P_C$ d) $P_A = P_B > P_C$

36. As we go to the higher altitudes, the atmosphere

a) remains as in sea level b) becomes dilute and atmospheric pressure increases

c) becomes dense and atmospheric pressure increases

d) becomes dilute and atmospheric pressure decreases

37. When food spoils, it emits a foul odour as a result of a chemical change. In this process food reacts with A of air and produces B. A and B are respectively

a) oxygen and volatile substances with foul odour b) oxygen and CO_2

c) nitrogen and volatile substances with foul odour d) nitrogen and NO_2

38. Lime water becomes milky when kept in air due to formation of

a) calcium hydroxide in it by reaction of water vapour with calcium oxide

b) calcium nitrate in it by reaction of nitrogen with calcium oxide

c) small calcium oxide crystals due to presence of oxygen of air

d) calcium carbonate in it by reaction of carbon-di-oxide of air with calcium hydroxide

39. When a shaving blade is kept for sometime into a blue-coloured copper sulphate solution, a brown colour deposit forms on it. Because the blade is made of A and the solution turns green due to the formation of B. A and B are respectively

a) iron and ferrous sulphate b) copper and ferrous sulphate

c) copper and copper sulphate d) iron and copper

40. By dissolving sugar in hot water, Rita's mother prepared concentrated sugar syrup and then cooled it. Some sugar crystals separated during cooling. This denotes a

a) both way physical change b) both way chemical change

c) one way physical change (d) one way chemical change

41-42. Test tubes P and Q contain equal amounts of aqueous hydrochloric acid. Now, magnesium and sodium carbonate are added to test tubes P and Q respectively. It is proposed that the gas evolved in

i) both the test tubes will extinguish a burning splinter

ii) the test tube P will burn with a pop sound and extinguish a burning splinter

iii) the test tube Q will turn lime water milky

iv) the test tubes P and Q are both oxidising

41. Correct among the above propositions is

a) i, ii and iii b) ii and iii c) i, iii and iv d) iii and iv

42. The products obtained in the test tubes P and Q are respectively

a) H_2 and CO_2 b) CO_2 and H_2 c) CO_2 and O_2 d) O_2 and CO_2

43. The plasma is created in stars because of

a) very low temperature b) very high temperature

c) rapid ionisation of atoms d) both b and c

44. The type of mirror used as a back view mirror may be

a) plane or concave b) concave only

c) convex only d) plane or convex

45. The images formed by a camera and a simple microscope are respectively

a) real and real b) real and virtual c) virtual and virtual d) virtual and real

46. The splitting of white light into its seven constituent colours is due to

a) refraction and it is called dispersion b) reflection and it is called dispersion

c) reflection and it is called deviation d) total internal reflection

47-48. Consider the items in the lists A and properties of some items in the list B

List A	List B
1. Thermoplastic	1. Sonorous
2. Thermosetting plastic	2. High polish
3. Solid metals	3. Polyester
4. Reflector	4. Polyurethane

47. A set of best matches of items of list A and properties of the items in the list B is

a) A1→B1, A2→B2, A3→B3 b) A1→B2, A2→B4, A3→B2

c) A1→B3, A2→B4, A3→B1 d) A1→B4, A2→B1, A3→B2

48. A set of best matches of items of list A and properties of the items in the list B is

a) A4→B1, A3→B2, A2→B3 b) A4→B2, A3→B3, A2→B1

c) A4→B3, A3→B2, A2→B1 d) A4→B2, A3→B1, A2→B4

49. Two identical pots made of clay and copper are heated at similar rate. After five minutes, the temperature of

a) clay pot will be more b) copper block will be more

c) both pots will be same d) both pots will depend on local atmospheric pressure

50. If g be the acceleration due to gravity, the maximum height reached by a body projected vertically with velocity V from the surface of the earth is

a) $\frac{1}{2}$ gV b) $\frac{1}{2}$ g/V^2 c) √(2gV) d) $\frac{1}{2}V^2/g$

51.An artificial satellite having the same time period of revolution as that of the earth is called

a) stationary satellite b) geostationary satellite

c) gravitational satellite d) geographical satellite

52. The list containing elements only is

a) iron, carbon, water, oxygen b) hydrogen, oxygen, carbon-di-oxide, copper

c) air, water, sulphur, carbon d) calcium, sulphur, carbon, iron

53. An element used as a catalyst in the hydrogenation of vegetable oils is

a) zinc b) iron c) nickel d) boron

54. It is proposed that purification of drinking water may be done by i) Helium, ii) Chlorine, iii) Fluorine, iv) Bromine. Correct list of substances to be used is given in

a) ii b) i, iii c) iii, iv d) iv

55. If both the K and L shells are full in an atom and there is no other electron in the atom, the atomic number of that element is

a) 20 b) 14 c) 10 d)16

56. An atom differs from an ion of the same element with respect to the

a) number of protons b) nuclear charge

c) number of electrons d) mass number

57. The number of valence electrons present in magnesium is

a) two b) three c) four d) five

58. Correct arrangement of materials listed from soft to hard is

a) Na, Al, Fe, Cu b) Cu, Na, Al, Fe c) Na, Al, Cu, Fe d) Al, Na, Cu, Fe

59. Two substances neither of which is made from petroleum are

a) talcum powder and napthalene balls b) napthalene balls and coal tar

c) polyester and teflon d) teflon and talcum powder

60. Two changes, physical and chemical respectively, are

a) rusting of iron and setting of curd b) sublimation of camphor and rotting of egg

c) setting of curd and rusting of iron

d) evaporation of water and crystallisation of blue vitriol

61. Release of heat, light and sound is easily observable in the

a) burning of H_2 b) reaction of Na and $CuSO_4$ solution

c) burning of wax vapour d) reaction of O_2, H_2O and Fe

62. Instead of water, CO_2 is chosen as fire extinguisher as water

a) is heavier than oil b) may conduct electricity

c) both a and b d) cannot be sprayed easily

63.In the reaction $Fe + CuSO_4 = FeSO_4 + Cu$, electron is received by

a) Fe atom b) Fe^{2+} ion c) Cu atom d) Cu^{2+} ion

64. Two miscible liquids with different boiling points can be separated by

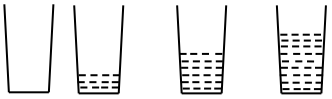
a) fractional distillation b) centrifugation c) extractive distillation d) batch filtration

65. The names of negative and positive terminals of a cell are respectively

a) anode and cathode b) cathode and anode

c) cathode and electrode d) anode and electrode

66. Four similar glasses, one empty (P) and others with one-fourth (Q), half (R) and three-fourth (S) filled with water are taken. A metal rod is dragged from one side to the other at identical speed such that it touches all the glasses. Frequency of sound will be maximum for the sound produced at



P Q R S

a) P b) Q c) R d) S

67. Name of the process by which alum helps to clean muddy water is

a) decantation b) absorption c) adsorption d) coagulation

68. $X + O_2 \rightarrow Y$, $Y + H_2O \rightarrow Z$. If Z turns red litmus blue, X and Z may be respectively

a) Na and NaOH b) Ca and CaOH c) Al and AlOH d) B and BOH

69. Ratio of amplitude of vibration of two earthquakes of measure 3.0 Richter and 2.0 Richter is

10. 6.0 and 4.0 Richter earthquakes will represent two earthquake waves of amplitude ratio

a) 1.5 b) 10 c) 20 d) 100

70. A metal has lesser electrical conductivity than a non metal. Those are respectively

a) mercury and diamond b) nichrome and diamond

c) nichrome and graphite d) mercury and glass

71. If $x - \frac{1}{x} = 3$, the value of $\frac{x}{x^2-x-1}$ will be

a) $\frac{3}{2}$ b) $\frac{1}{2}$ c) 0 d) 1

72. If $y = u+ft$, $p = \frac{1}{2}(u+y)\,t$, p expressed in terms of u, f, t will be

a) $ut + \frac{1}{2}ft^2$ b) $\frac{1}{2}(u + ft + t^2)$ c) $\frac{ut+f}{t^2}$ d) $\frac{ut^2+ft}{2}$

73. If $\frac{x}{a} = \frac{1}{a} - \frac{1}{x}$, the value of $x(1-x)$ is

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

74. The simplest value of $(0.4)^2 + \sqrt{(0.04)} + 1\%$ of 400 is

a) 2.36 b) 4 c) 4.36 d) 4.02

75. m men can do a work in f days. If all men work at same rate, the number of days required for $(m+r)$ men to do the work will be

a) $\frac{m}{f(m+r)}$ b) $\frac{m}{f} + r$ c) $\frac{mf}{(m+r)}$ d) $fm + \frac{mr}{f}$

76. If $\sqrt[3]{x} + \sqrt[3]{y} = \sqrt[3]{729}$ and $x=27$, the value of y is

a) 81 b) 216 c) 6 d) – 3

77. If $x^2 + y^2 + z^2 + 2 = 2(y - x)$, the value of $x+y+z$ is

a) 2 b) – 1 c) 1 d) 0

78. If $x + y = 36$, HCF and LCM of x and y are respectively 3 and 105, the value of $\frac{1}{x} + \frac{1}{y}$ is

a) $\frac{4}{35}$ b) 5 c) $\frac{7}{25}$ d) 35

79. A player played 10 innings and he was out in each innings. In eleventh innings he was out after scoring 100 runs. His average score of first 10 innings increased by 5 after this innings. Now his average score is

a) 45 b) 55 c) 50 d) 60

80. A business man allows a% discount followed by a discount of b% to his customers. What discount would he allow in one step to make the percentage discount equal?

a) $(a+b)\%$ b) $(a+b-\frac{ab}{100})\%$ c) $(100 - \frac{ab}{100})\%$ d) $\frac{ab-(a+b)}{100}\%$

81. In what ratio tea bought at Rs.900 per kg is to be mixed with tea bought at Rs.450 per kg so that there will be no loss or gain in selling the mixture at Rs.750 per kg?

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

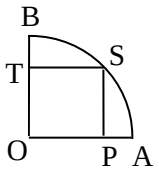
82. If $\frac{x-8}{x-9} + \frac{x-4}{x-5} = \frac{x-9}{x-10} + \frac{x-3}{x-4}$, the value of x is

a) 7 b) – 4 c) 0 d) – 3

83. A room is 5.8 meters long, 1.6 meter high. The cost of colouring its all walls at the rate of Rs.200 per sq. m. is Rs.6400. Area of floor of the room in sq. m. is

a) 28.42 b) 24.36 c) 41.24 d) 30.24

84. The rectangle SPOT is drawn in the quadrant OAB of a circle.



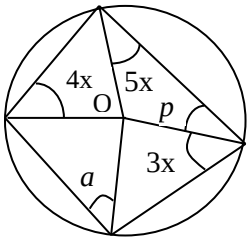
If AP = 1cm and BT = 8 cm, the radius of the circle in cm unit is

a) 7 b) 15 c) 13 d) 5

85. 7 solid cylindrical iron rods of radius of cross-section 4.0 cm and height 2.0 cm are melted to form 11 solid cubes. Length of each cube in cm is

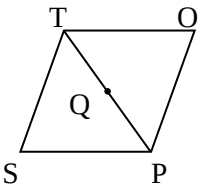
a) 8 b) 3 c) 4 d) 7

86. Four triangles are drawn inside a circle with center O as shown in the diagram. If measure of the angle a be $\frac{3p^0}{5}$, the measure of x is



a) 10^0 b) 15^0 c) 12^0 d) 24^0

87. SPOT is a rhombus, $\angle SPO = 120^0$. Q is the midpoint of TP. The length of TS in cm is

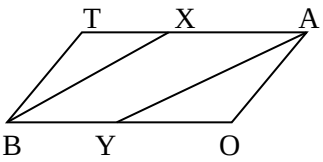


a) 24 b) 36 c) 20 d) 12

88. The smallest number which is product of four different prime numbers is

a) 105 b) 210 c) 36 d) 140

89. BX is the bisector of $\angle TBO$ of the parallelogram BOAT. If, AY || BX,



a) AX = BT b) BT = YO

c) BO = 2BT d) BYAX is a rectangle

90. The simplest value of $\frac{\sqrt[3]{64\times729}\times\sqrt[3]{1\,25}}{\sqrt{196}+2\sqrt{121}}$ is

a) 1 b) 10 c) 5 d) 8

91. p and q are one digit prime numbers (p> q). You tried to divide pq number of biscuits equally among p+q number of children. You had 11 biscuits in excess. Then the value of p is

a) 2 b) 3 c) 5 d) 7

92. 51Z is a three digit number divisible by 11. Value of Z is

a) 3 b) 4 c) 7 d) 8

93. One factor of $x^4 - 7x^2y^2 + y^4$ is

a) $(x^2 + y^2 - 3xy)$ b) $(x^2 - y^2 + 3xy)$ c) $(x^2 - y^2 + 2xy)$ d) $(x + y - 3xy)$

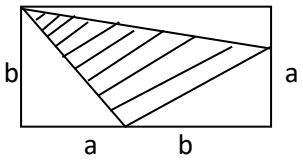
94. PQR is an equilateral triangle. QP is extended to a point S such that QP = PS. Measure of $\angle QRS$ is

a) 120^0 b) 100^0 c) 90^0 d) 80^0

95. Parallel sides of a trapezium are 12 cm and 36 cm long. If oblique sides are 15 cm each, the area of the trapezium in sq cm is

a) 120 b) 200 c) 180 d) 216

96. In the diagram, area of the shaded triangle inside the rectangle with sides of length b and a+b is



a) $\frac{1}{2}(a^2 + b^2)$ b) $\frac{1}{2}ab(a + b)^2$ c) $\frac{1}{2}a(a + b)$ d) $\frac{1}{2}(a + b)^2$

97. O is a point inside ΔABC such that OA = OB = OC. If $\angle BOC = 140^0$, $\angle COA = 70^0$, measure of $\angle BCA$ is

a) 70^0 b) 75^0 c) 85^0 d) 90^0

98. Simple value of $\frac{(553+129)^2-(553-129)^2}{4\times553\times129}$ is

a) 424 b) 0 c) 2(553-129) d) 1

99. If $x^2 + y^2 - 8x + 6y + 25 = 0$, the value of $4x + 3y$ is

a) 15 b) 13 c) 8 d) 7

100. In the lists A and B below there are some mathematical expressions and some numbers respectively

List A	List B
1. $0.\dot{9} + 0.0\dot{9} + 0.00\dot{9}$	i. 2.8
2. $\sqrt[3]{8^2} - \sqrt[4]{81} + 1\frac{4}{5}$	ii. 1.11
3. 1.0 +1.1 – 1.2 +1.3 –1.4 …… up to 20^{th} term	iii. 1.5
4. 10.0 – 9.9 + 9.8 – 9.7….. up to 30^{th} term	iv. 3.0

The correct match of the items in the two lists is

a) A1-Bii, A2-Bi, A3-Biv, A4-Biii b) A1-Biii, A2-Bii , A3-Biv, A4-Bi

c) A1-Bii, A2-Biii, A3-Biv, A4-Bi d) A1-Bi, A2-Biii, A3-Biv, A4-Bii