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

Time: 2 hr   Full Marks: 240

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 ○ ○ ⊗ ○ **4 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.

1-2. One piece each of fried fish, whole mango, nimki biscuit and roti are placed on similar pieces of ordinary paper.

1. The pair of substances which would leave easily distinguishable patches on the papers after sometime is

a) fried fish and whole mango   b) whole mango and nimki biscuit

c) nimki biscuit and roti   d) fried fish and nimki biscuit

2. The patches are due to

a) skin of the substances placed on it   b) oil

c) vitamins in the substances placed on it   d) water

3. You have some household items. Taking those in hand and viewing those carefully, you may distinguish those on different counts easily but not on whether those ore

a) transparent or translucent   b) heavy or light

c) conductor or nonconductor   d) hard or soft

4. Study the substances and characteristics in lists A and B below:

Items: List A	Characteristics: List B
1. Vitamin C	i. Lighter than water
2. Rice bran oil	ii. Heavier than water
3. Raw rice	iii. Water soluble

Correct (or best) match of the items in the above list is

a) A1→ Bi, A2 →Bii, A3→ Biii   b) A1→ Bii, A2 →Biii, A3→ Bi

c) A1→ Bii, A2→ Biii, A3→ Bii   d) A1→ Biii, A2→ Bi, A3→ Bii

5. Study the substances and their sources in list A and list B below:

Products: List A	Sources: List B
1. Wood polish	i. Resin
2. Hammer	ii. Iron
3. Table	iii. Polythene
4. Bucket	iv. Wood

Correct (or best) match of the items in the above lists is

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

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

6. Study the organisms and processes in list A and list B below:

Organisms: List A	Process: List B
1. Flowers and bees	i. Symbiosis
2. Food wastes and crow	ii. Pollination
3. Cattle egret and cow	iii. Cleaning

Correct (or best) match of the items in the above list is

a) A1→ Bi, A2 →Bii, A3→ Biii   b) A1→ Bii, A2 →Biii, A3→ Bi

c) A1→ Bii, A2→ Biii, A3→ Bii   d) A1→ Biii, A2→ Bi, A3→ Bii

7. The microorganism that helps curd making is

a) Lactobacillus   b) Yeast   c) E. coli   d) Penicillium

8. Similar mosquitoes cause

a) dengue and chikungunya but they bite in day and night respectively

b) dengue and chikungunya and both of them bite in daytime

c) chikungunya and malaria but they bite in day and night respectively

d) dengue and malaria but they bite in day and night respectively

9. Motion of pendulum of a clock is periodic. Another example of periodic motion is

a) occurrence of solar eclipse   b) motion of cars in street

c) rotation of the earth about own axis   d) flood in river

10. Two substances used as fertilizer are

a) DAP and carbaril   b) potash and DDT   c) carbaril and urea   d) urea and DAP

11. Chemical change occurs to an iron rod in both cases when it is

a) magnetized or heated   b) heated or dipped in muriatic acid

c) dipped in soap water or rusted   d) dipped in muriatic acid or rusted

12. Two consecutive steps for separation of water from a solution of salt in water are

a) sedimentation and decantation   b) sedimentation and filtration

c) filtration and condensation   d) evaporation and condensation

13. Three plants having fibrous roots are

a) paddy, coconut and bamboo   b) paddy, bamboo and gram

c) gram, bamboo and coconut   d) paddy, coconut and mango

14. Table A gives a list of bones and Table B specifies some grades of movement.

Table A	Table B
1. Pelvic bones	i. High movement
2. Cranium	ii. Medium movement
3. Carples	iii. No movement

Correct (or best) match of the items in the above list is

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

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

15. Table A gives a list of bone-joint type and Table B specifies some locations of bone-joints.

Table A	Table B
1. Saddle joint	i. Joint at neck
2. Hinge joint	ii. Joint at thumb
3. Pivot joint	iii. Joint at knee

Correct (or best) match of the items in the above list is

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

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

16. A plant belonging to the class gymnosperm is

a) mango   b) jack fruit   c) pyne   d) wheat

17. Table A and Table B give two lists.

Table A	Table B
1. Omnivorous animal	i. Prawn
2. Animal able to detect faint sound	ii. Chimpanze
3. Aquatic animal	iii. Deer

Correct (or best) match of the items in the above list is

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

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

18. Respiration through skins is seen in the animal

a) earthworm   b) snake   c) red ant   d) lizard

19. A vehicle with wheels which conduct electricity is

a) train   b) bus   c) cycle   d) aeroplane

20. To obtain Decimeter measure of a distance its Kilometer measure is to be multiplied by

a) 10^2 b) 10^3 c) 10^4 d) 10^5

21. All three substances are elements in the group

a) table salt, lime and carbon   b) paper, iron and urea

c) carbon, potassium and sugar   d) iron, copper and oxygen

22. All of the substances are non-conductor of electricity in the group

a) glass, copper and paper   b) paper, glass and bakelite

c) nylon, bakelite and iron   d) rubber, aluminum and iron

23. Air around us does not contain

a) nitrogen and chlorine   b) oxygen and hydrogen

c) hydrogen and chlorine   d) carbon-di-oxide and helium

24. When light falls on a surface of limited size, shadow is formed if the surface is

a) opaque   b) transparent   c) translucent   d) any of a to c

25. You are measuring length of a rod by a scale. You placed one end of the rod at 4.0cm mark of the scale and the other end is found to be at 20.4cm. Length of the rod is

a) 24.4cm   b) 16.4cm   c) 81.6 cm   d) 5.1cm

26. Length of a curved line can be measured with fair correctness by using

a) an ordinary scale and a rod   b) an ordinary scale and a thread

c) a thread and a pen   d) a pen and a pencil

27. A pair of animals, both of which are mamals is

a) rat and frog   b) shark and cat

c) whale and dog   d) bat and parrot

28. Cells used in remote of TV have in them an electrode along the centre covered by some electrolyte in paste form in a capsule made of

a) paper   b) metal   c) plastic   d) any one of a to c

29. A pin moves towards a magnet. But it did not move when a substance S was placed between the magnet and the pin. S may be a sheet of

a) iron   b) paper   c) glass   d) any one of a to c

30. A pair of animals in mollusca group are

a) snails and crocodiles   b) prawns and spiders

c) spiders and oysters   d) oysters and snails

31. The difference between 7680×917 and 767×9170 is
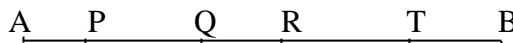
a) 7680   b) 9170   c) 7580   d) 7100

32. The difference between (6760×938−675×9380) and (6750×537−675×5360) is

a) 6760   b) 9380   c) 6750   d) 2630

33. There are 216 black balls and nothing else in an urn. 4 black balls of the urn are replaced by 8 white balls. This process is repeated till all black balls are replaced by white balls. The total number of white balls in urn at the end of the process is

a) 464   b) 1728   c) 432   d) 216

34. The number of line segments (like AB, AT etc.)   A____P____Q____R____T____B
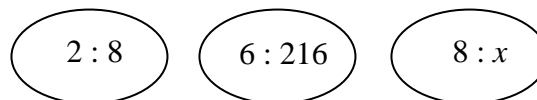in the given figure is

a) 5   b) 10   c) 15   d) 20

35. The ratio of Arka's weight to Barun's weight is 9:10 and that of Barun's weight to Rohit's weight is 7:6. If Rohit's weight is the L. C. M. of 30kg and 4kg, the weight of Arka in kg unit is

a) 60   b) 63   c) 70   d) 42

36. If identical rule applies to each of the pair of numbers in the three figures, the value of x is

$2 : 8$ $6 : 216$ $8 : x$

a) 432   b) 532   c) 612   d) 512

37. Sumana rented a car for $2\frac{1}{2}$ hours. The fare was Rs.160.50 for the first hour and Rs. 50.50 for every subsequent 20 minutes or a part thereof. The total fare of the journey in Rs. was
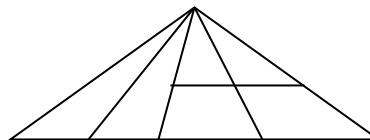
a) 362.50   b) 401.25   c) 413.00   d) 426.50

38. After paying income tax at the rate of 5 paise per rupee, Raju got Rs. 1900 as his post-tax income. His income (in Rs.) before payment of tax was

a) 1950   b) 2000   c) 1990   d) 2100

39. Number of triangles in the adjoining figure is

a) 9   b) 11   c) 12   d) 13

40. Simplest value of $(0.1 \div 0.01 \times 0.001$ of $0.0001)$ is

a) 0.000001   b) 0.00001   c) 0.0000001   d) 0.00000001

41. Value of $\frac{1}{7} + (999\frac{62}{63}) \times 9$ is

a) 9900   b) 9000   c) 9990   d) 99000

42. The largest 5 digit integer divisible by 73 is

a) 99926   b) 99995   c) 99973   d) 99937
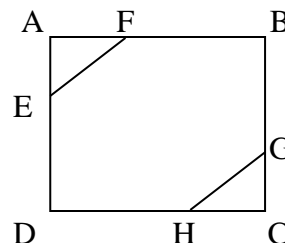
43. A pattern is shown here

$$9 \times 8 = 72$$
$$99 \times 88 = 8712$$
$$999 \times 888 = 887112$$

On the basis of the above pattern, the value of 99999×88888 is

a) 888881112   b) 9888811112   c) 88888711112   d) 8888711112

44. In the adjoining figure, ABCD is a square and BF is 3 times of AF. If $EF = GH = 5$cm, $AE = GC = 3$ cm, $AF = CH = 4$ cm, then the perimeter of the region EFBGHDE in cm unit is

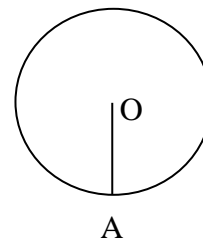a) 45   b) 50   c) 55   d) 60

45. The independence day in the year 2013 was Thursday. The independence day in 2018 was

a) Sunday   b) Monday   c) Wednesday   d) Friday

46. A square-base pyramid has x no. of faces, y no. of edges and z no. of corners. The values of x, y and z are respectively

a) 4, 10 and 5   b) 5, 10 and 5   c) 5, 8 and 5   d) 5, 5 and 5

47. A wheel makes five and half turns. In the process the number of right angles subtended by a radial line OA (see figure beside) at the center of the wheel is

a) 22   b) 24   c) 20   d) 18

48. The sum of all prime numbers of two digits having 1 at ten's place is

a) 59   b) 60   c) 65   d) 67

49. There are some incomplete mathematical statements in the list A and the complements needed to complete either of the statements are given in the list B

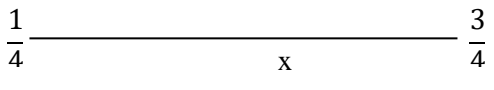| List A: incomplete mathematical statements	List B: complement
1. quotient for divisor and dividend with opposite signs is	i. positive number
2. product of two factors, each with negative sign is	ii. negative number
3. product of two odd numbers each comprising of 5 digits	iii. odd number
4. product of one odd and one even number each of 5 digits	iv. even number

Correct match of the items in list A and list B are

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

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

50. The product of number of faces, edges and vertices of a tetrahedron is

a) 96   b) 84   c) 112   d) 120

51. The number x at two-thirds of the distance from $\frac{1}{4}$ to $\frac{3}{4}$ is

a) $\frac{11}{12}$ b) $\frac{5}{12}$ c) $\frac{7}{12}$ d) $\frac{1}{3}$

$$\frac{1}{4} \underline{\hspace{6cm}} \frac{3}{4}$$
$$x$$

52. The number obtained by subtracting largest 6 digit odd negative integer from the smallest 5 digit odd positive integer is

a) 110002   b) 110000   c) -90000 d) 90000

53. Next term of the series B6, E9, H13, K18 is

a) M23   b) N24   c) M25   d) N26

54. Number of prime factors of 21210 is

a) 6   b) 7   c) 4   d) 5

55. A number having 11 digits with 1 at the highest place value is divided by a three digit number with 7 at the hundred's place. The number of digits of the quotient is

a) 10   b) 9   c) 8   d) 7

56. Simplest form of $0.4 + \frac{1.5}{0.9}$ is

a) $2.\dot{0}\dot{6}$ b) $2.\dot{6}$ c) $2.0\dot{6}$ d) $2.\dot{6}\dot{0}$

57. p and q are one digit prime numbers (p $\neq$ q). G C F of three numbers 3p, $9p^2$ and 7pq is an even number. The value of p will be

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

58. Some two digit numbers leave remainder 2 when divided by 8. Sum of all such two digit numbers is

a) 630   b) 638   c) 648   d) 660

59. One digit of a 4 digit number is interchanged from one place to another and the number remained a 4 digit number. It might be changed (increased or reduced) maximum by

a) 9009   b) 8992   c) 7992   d) 7882

60. The number of obtuse angles in the adjoining figure is

a) 6   b) 5   c) 4   d) 3