2024
ANNUAL COMPETITION
CLASS-X
Time Allowed: 2(Two) hours

INSTRUCTIONS*:*
This booklet contains 60 questions. Each question comprises four possible answers. Select ONLY ONE answer which you consider the best and mark it on the answer sheet. All questions carry equal marks. No marks will be deducted for incorrect answers.

Section A (English)

1. Choose word which is most similar in meaning to the word VANITY.

   (A) VAIN (B) VALUELESS

   (C) PRIDE (D) PLIGHT

2. Antonym to the word RETAIL:

   (A) MATERIAL (B) PRICE

   (C) SALE (D) WHOLESALE

3. Which of the following words mean *Rustic*?

   (A) cultured (B) rural

   (C) corrosive (D) refined

4. Change the following sentence into indirect speech:

   "Don't go near the fire, boys", he said.

   (A) The boys were asked not to go near the fire. (B) He said not to go near the fire to the boys.

   (C) He warned the boys not to go near the fire. (D) He said don't go near the fire to the boys.

5. Change the voice of the sentence given below:

A promise should be kept..

(A) Keep a promise.
(B) Promises should be kept.
(C) Promises are made to be kept.
(D) One should keep one's promise.

6. Find out the correct sentence or sentences.

(A) I cannot call to mind what happened
(B) He takes pride on his success
(C) They enjoyed themselves at theatre.
(D) All the above.

7. Complete the sentence with a suitable option:

He goes nowhere nowadays, _____?

(A) do he?
(B) does he?
(C) don't he?
(D) has he?

8. Fill in the appropriate preposition from the following:

He was appointed _____ that post.

(A) to
(B) in
(C) for
(D) at

9. Change the narration:

He said, "I shall do it."

(A) He said that he should do it.
(B) He said that he shall do it.
(C) He said that he would do it.
(D) He said that he will do it.

10. Complete the sentence with the suitable option given below:

You have no excuse _____ late.

(A) to be
(B) for being
(C) to being
(D) for

(Read the following passage carefully and answer the questions 11 to 15)

"I Have a Dream" is a public speech delivered by American civil rights activist Martin Luther King Jr. during the March on Washington for Jobs and Freedom on August 28, 1963, in which he calls for an end to racism in the United States and called for civil and economic rights. Delivered to over 250,000 civil rights supporters from the steps of the Lincoln Memorial in Washington, D.C., the speech was a defining moment of the civil rights movement.

Beginning with a reference to the Emancipation Proclamation, which freed millions of slaves in 1863, King observes that: "one hundred years later, the Negro still is not free". Toward the end of the speech, King departed from his prepared text for a partly improvised peroration on the theme "I have a dream", prompted by Mahalia Jackson's cry: "Tell them about the dream, Martin!" In this part of the speech, which most excited the listeners and has now become its most famous, King described his dreams of freedom and equality arising from a land of slavery and hatred. Jon Meacham writes that, "With a single phrase, Martin Luther King Jr. joined Jefferson and Lincoln in the ranks of men who've shaped modern America". The speech was ranked the top American speech of the 20th century in a 1999 poll of scholars of public address.

11. In front of whom does King speak?

(A) The civil rights supporters (B) His friends

(C) Lincoln (D) The Negroes

12. What pushes King to speak: “I have a dream”?

(A) He reads out the Emancipation Proclamation (B) He is prompted by Mahalia Jackson

(C) He is overwhelmed by the crowd (D) Licoln had asked him to give the speech

13. What issues does Martin Luther King’s speech address?

(A) Continuation of racism (B) End to racism and civil and economic rights

(C) Civil rights (D) Civil War

14. From the last paragraph, give one word for “to leave”

(A) Departed (B) Proclamation

(C) Improvised (D) Address

15. What does the word *racism* mean?

(A) equal treatment to people based on their race or ethnicity (B) discrimination against people based on their race or ethnicity

(C) treating every religion equally (D) all the above

Section B (Science)

16. Three equal resistances, when connected in series have equivalent resistance of 90Ω. Their equivalent resistance when connected in parallel will be:

(A) 60Ω (B) 20Ω

(C) 30Ω (D) 10Ω

17. An ammeter is usually connected in _____ and a voltmeter is connected in _____ in a circuit.

(A) series, series (B) parallel, parallel

(C) series, parallel (D) parallel, series

18. The working of an electric generator is based on _____

(A) electromagnetic induction (B) parallel combination

(C) series combination (D) Flemings left hand rule

19. Which of the followings is based on renewable resources?

(A) Thermal power plant (B) Hydel power plant

(C) Nuclear power plant (D) Gen set

20. Mirages are optical illusions formed by

(A) dispersion of light (B) refraction of light

(C) scattering of light

(D) total internal reflection of light

21. Mendel conducted his famous breeding experiments by working on the following:

(A) Drosophila

(B) E. coli

(C) Pisum Sativum

(D) All of above

22. _____ acts as a plant hormone and can prevent the longitudinal elongation of stem and roots.

(A) Gibberellins

(B) Abscisic acid (ABA)

(C) Ethylene

(D) Cytokinin

23. When an animal is cut into pieces and each piece grows into a complex organism. What is the process?

(A) Budding

(B) Fragmentation

(C) Spore formation

(D) Regeneration

24. The chemical messengers released by endocrine glands are called

(A) Hormones

(B) Neurotransmitters

(C) Enzymes

(D) Digestive juices

25. Chlorophyll, Xanthophylls, and Carotene are

(A) Enzymes

(B) Pigments

(C) Hormones

(D) Gases

26. The term "catalyst" refers to _____

(A) Can either increase or decrease the speed of a chemical reaction

(B) Alters the value of equilibrium constant in a reversible chemical reaction

(C) Increases the speed of a chemical reaction

(D) Decreases the speed of a chemical reaction

27. The pH of which of the following is more than 7?

(A) gastric juice (B) vinegar

(C) blood plasma (D) lemon juice

28. Copper and zinc alloy is known as _____

(A) Brass (B) Bronze

(C) Duralumin (D) Nichrome

29. The attributes of corresponding elements are the periodic functions of the _____

(A) Atomic Weights (B) Atomic Number

(C) Chemical properties (D) No of protons

30. The chemical formula of marble is

(A) $Ca(OH)_2$ (B) CaO

(C) $CaCO_3$ (D) $CaCl_2$

Section C (Mathematics)

31. If the radius of a sphere is doubled, then the ratio of the volume of the first sphere to that of the second sphere is

(A) 1: 2 (B) 1: 4

(C) 1: 8 (D) 1: 1

32. A chord of a circle is equal to the radius of the circle. The angle subtended at the circumference by the major arc is

(A) 30^0 (B) 45^0

(C) 60^0 (D) 90^0

33. If $a + b + c = 0$ then

(A) $a^3 + b^3 + c^3 = 0$ (B) $a^3 + b^3 + b^3 = abc$

(C) $a^3 + b^3 + b^3 + 3abc = 0$ *(D)* $a^3 + b^3 + b^3 = 3abc$

34. For any positive integer n, the number $n^3 - n$ is divisible by

(A) 6 (B) 8

(C) 11 (D) 7

35. If $tanx + \frac{1}{tanx} = 2$, then the value of $tan^2x + \frac{1}{tan^2x}$ is

(A) 4 (B) 2

(C) 1 (D) 6

36. The HCF of smallest composite number and smallest prime number is

(A) 1 (B) 2

(C) 3 (D) 4

37. If $sec\theta + tan\theta = p$, then $cosec\theta$ is equal to

(A) $\frac{p^2+1}{p^2-1}$ (B) $\frac{p+1}{p-1}$

(C) $\frac{p^2-1}{p^2+1}$ (D) $p + \frac{1}{p}$

38. The area of three adjacent faces of a cuboid are x^2, y^2 and z^2. If the volume of the cuboid is V, then V is equal to

(A) $x^3y^3z^3$ (B) xyz

(C) $\sqrt{xyz}$ (D) $x^2y^2z^2$

39. If $cos\theta = \frac{1}{4}$ then the value of $(2tan^2\theta + 2)$ is

(A) 2 (B) 16

(C) 64 (D) 32

40. If $a + b = 2$, $b + c = 3$ and $c + a = 5$ then $a^2(b + c) + b^2(c + a) + c^2(a + b)$ is equal to

(A) 100 (B) 50

(C) 60 (D) 30

41. If $sin3\theta = cos(\theta - 6^0)$, where 3θ and $\theta - 6^0$ are acute angles. The value of θ is

(A) 18^0 (B) 26^0

(C) 24^0 (D) 36^0

42. The relation between x and y, if the points $(x, y), (1,2)$ and $(7,0)$ are collinear is

(A) $x = 7 - 3y$ *(B)* $x - y = 5$

(C) $y = x - 7$ (D) $x = 7y$

43. A wall lizard goes after an ant on a wall. The ant moves 12ft due east and then he changes his route due north by 5m. How far is the ant from the starting point?

(A) 13m (B) 12m

(C) 17m (D) 7m

44. The ratio in which the line segment joining the point $(2, -3)$ and $(5,6)$ is divided by the axis of x is

(A) 2:3 (B) 2:1

(C) 3:4 (D) 4:3

45. x is a multiple of 13. When x is divided by 5,8 and 12, it leaves 2 as remainder in each case. The minimum value of x is

(A) 862 (B) 926

(C) 962 (D) 1062

46. If two vertices of an equilateral triangle are $(0,0)$ and $\left(3, \sqrt{3}\right)$, then the area of the triangle is

(A) $3\sqrt{3}$ (B) $2\sqrt{3}$

(C) $3\sqrt{2}$ (D) $4\sqrt{3}$

47. For real numbers x and y, which of the followings is not true?

(A) $|xy| = |x||y|$ (B) $|x + y| \leq |x| + |y|$

(C) $|x - y| \geq |x| - |y|$ (D) $|x - y| < \delta \Rightarrow y + \delta < x < y - \delta$

48. A point on the axis of x is equidistant from the two points $(7,6)$ and $(-3,4)$. The co-ordinates of the point on the x −axis is

(A) $(0,0)$ (B) $(0,3)$

(C) $(3,0)$ (D) $(3,3)$

49. Two isosceles triangles have equal vertical angles and the ratio of their corresponding altitudes are in the ratio $3:4$. The ratio of their corresponding areas is

(A) $9:16$ (B) $6:7$

(C) $4:3$ (D) $7:12$

50. $2p+1$, 13, and $5p-3$ are three consecutive terms of a arithmetic progression. If so, then the value of p is

(A) -4 (B) 3

(C) -2 (D) 4

51. Two of three vertices of a triangle are $(3,-5)$ and $(-7,4)$. If the centroid is $(2,-1)$, then the co-ordinates of the third vertex is

(A) $(10,2)$ (B) $(-10,2)$

(C) $(-10,-2)$ (D) $(10,-2)$

52. The 10th term from the end of the arithmetic progression: $4,9,14,\ldots,254$ is

(A) 210 (B) 109

(C) 209 (D) 290

53. The nature of the roots of the quadratic equation $4x^2+6x+3=0$:

(A) roots are not real (B) roots are real and equal

(C) roots are rational (D) roots are real and unequal

54. If 5 times the 5^{th} term of a arithmetic progression is 10 times the 10^{th} term, then the 15^{th} term of the A.P. is

(A) -1 (B) 0

(C) 10 (D) 20

55. The value of p so that the quadratic equation $px(x-3)+9=0$ has two equal roots is

(A) 3 (B) 9

(C) 4 (D) 27

56. If $1+6+11+\cdots+x=148$, then the value of x is

(A) 28 (B) 36

(C) 32 (D) 41

57. If $x-1$ is a factor of the polynomial $P(x)=kx^2-3x+2k$, then the value of k is

(A) 1 (B) 0

(C) -1 (D) $\frac{1}{2}$.

58. The value of k so that the system of linear equations: $3x-y-5=0$ and $2y-k-6x=0$ has no solution is

(A) $k=10$ (B) $k\neq 10$

(C) $k=-10$ (D) $k\neq -10$

59. The canonical decomposition of 217350 is

(A) $2\times 3^3\times 5^2\times 7\times 23$ (B) $2\times 3^2\times 5^3\times 7\times 23$

(C) $2\times 3^3\times 5^2\times 7\times 21$ (D) $2\times 3^3\times 5^2\times 7\times 33$

60. The roots of the quadratic equation $abx^2+(b^2-ac)x-bc=0$ are

(A) $\frac{b}{c},\frac{b}{a}$ (B) ac, bc

(C) $\frac{c}{a},\frac{b}{a}$ (D) $\frac{c}{b},-\frac{b}{a}$.