



EDUDIGM

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EDUDIGM APTITUDE CUM SCHOLARSHIP TEST

Class- X

Time: 1 hr.

M.M. 250

General Instructions (To be read carefully before answering the paper)

1. The Test Booklet consists of **50** questions divided into three sections - Question number 1 to 20 (**Mathematics**), Question number 21 to 40 (**Science**) and Question number 41 to 50 (**Aptitude**).
2. All the questions carry equal marks. For each correct answer, you shall be awarded **+5** marks and **- 1** for an incorrect answer. **0** marks shall be awarded in case of not attempting a question.
3. Mark only one correct answer out of four alternatives. Darken the circle completely in the OMR Answer sheet.
4. No candidate is allowed to carry any textual material, printed or written, bits of papers, pager mobile phone, any electronic device, etc., inside the examination hall/room.
5. On completion of the test, the candidate must hand over the OMR Answer Sheet to the Invigilator on duty in the Room/Hall.
6. **Do not fold or make any stray marks on the OMR Answer Sheet.**
7. **Resorting to unfair means shall lead to cancellation of the paper**
8. No extra sheets shall be provided to do rough work. You can only use the space provided in this question booklet. For doing rough work you may use either pen or pencil
9. Make sure that you have filled in your personal details completely before starting the test.

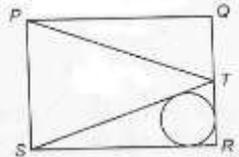
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MATHEMATICS

1. The value of $0.2\overline{72} + 0.13\overline{63}$ is
 (a) $\frac{3}{22}$ (b) $\frac{41}{100}$ (c) $\frac{9}{22}$ (d) $\frac{1}{2}$
2. The least number which should be multiplied with 525, so that it becomes a perfect square is
 (a) 3 (b) 7 (c) 5 (d) 21
3. $15^3 - 8^3 - 7^3$ is divisible by, which of the following?
 (a) 32 (b) 49 (c) 56 (d) 25.
4. The units digits of $12^{222} + 23^{333} + 34^{444}$ is
 (a) 3 (b) 2 (c) 4 (d) 5
5. If $3214a4$ is divisible by 4, the number of possible values of a is
 (a) 3 (b) 4 (c) 5 (d) 6
6. Which of the following is the greatest?
 (a) $\sqrt{8} + \sqrt{22}$ (b) $\sqrt{1} + \sqrt{29}$ (c) $\sqrt{12} + \sqrt{18}$ (d) $\sqrt{10} + \sqrt{20}$
7. If $x=2$, then the value of $x + \sqrt{x + \sqrt{x + \sqrt{x} \dots}}$ is
 (a) 1 or 2 (b) 2 (c) 1 or 4 (d) 4
8. If $x+y=p$ and $xy=q$, then the value of $\frac{1}{x^3} + \frac{1}{y^3}$ will be
 (a) $\frac{p^3-3}{q^2}$ (b) $\frac{p^3-3p}{q^3}$ (c) $\frac{p^3-3pq}{q^3}$ (d) $\frac{q^3-3pq}{p^2}$
9. If the polynomial $2x^3 - 9x^2 + 15x + P$, when divided by $(x - 2)$, leaves $-P$ as remainder, then P is equal to
 (a)-16 (b) - 5 (c) 20 (d) 10
10. If $2x + 3y = 13$ and $xy = 6$, then $8x^3 + 27y^3$ should be equal to which of the following ?
 (a) 790 (b) 793 (c) 783 (d) None to these
11. The value of $\sqrt{8 + 2\sqrt{15}}$ is
 (a) $\sqrt{3} + \sqrt{2}$ (b) $\sqrt{3} + \sqrt{5}$ (c) $\sqrt{2} + \sqrt{5}$ (d) None of these
12. For what value of k, the vertices (2,1), (3, 3) and (5, k) form an equilateral triangle?
 (a) 4 (b) 2 (c) $\frac{3}{4}$ (d) No such value exist
13. The coordinates of the mid-point of the sides of a triangle are (3, 6), (4, 5) and (2, 1), then the area of the triangle is
 (a) 3 (b) 4 (c) 8 (d) 12

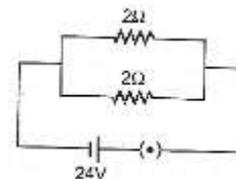
14. If $\frac{8}{3(2a+3b)} + \frac{21}{3a+2b} = \frac{10}{3}$ and $\frac{16}{2a+3b} - \frac{7}{3a+2b} = 1$. The value of $(3a+2b)$ is
 (a) $\frac{13}{3}$ (b) $\frac{3}{13}$ (c) $\frac{47}{28}$ (d) None of these
15. If 1 root of the equation $x^2 + 6mx + 64 = 0$ is the square of the other, the value of m is
 (a) $5/3$ (b) $8/3$ (c) $10/3$ (d) None of these
16. The sum of the squares of two consecutive positive integers is 365, the smaller of the two numbers is
 (a) 12 (b) 13 (c) 14 (d) 15
17. PQRS is a square of side 6 cm each and T mid-point of QR. What is the radius of c inscribed in ΔTSR ?
 (a) $\frac{3}{3-\sqrt{5}}$ (b) $\frac{6}{3+\sqrt{5}}$ (c) $\frac{2}{3+\sqrt{5}}$ (d) None of these
- 
18. Two tangents AB and AC are drawn to circle at B and C from a point A, which is 10 units away from the centre of the circle. If the tangents are perpendicular, what is the perimeter of ΔABC ?
 (a) $10(\sqrt{2} + 1)$ (b) $10(\sqrt{2} - 1)$ (c) $20(\sqrt{2} + 1)$ (d) None of these
19. Three identical circles of radius r cm each are placed inside an equilateral triangle. Find the length of the side of the equilateral triangle in terms of r ?
 (a) $2r$ (b) $3r$ (c) $2r(\sqrt{2} + 1)$ (d) $2r(\sqrt{3} + 1)$
20. The value of $\frac{\sin 64^\circ}{\cos 26^\circ} \times \frac{\operatorname{cosec} 47^\circ}{\sec 43^\circ} + \frac{\tan 25^\circ \times \tan 65^\circ}{\tan^2 30^\circ}$ is
 (a) 1 (b) 3 (c) 4 (d) 2

SCIENCE

21. An object of size 4 cm placed perpendicular to the principal axis of a concave mirror. The distance of the object from the mirror equals radius of curvature. The size of the image will be
 (a) 1 m (b) 2 m (c) 3.5 cm (d) 4 cm
22. The path of a refracted ray of light in a prism is parallel to the base of the prism only when the
 (a) light is of a particular wavelength (b) ray is incident normally at one face
 (c) ray undergoes minimum deviation
 (d) prism is made of a particular type of glass
23. If a wire of resistance 1Ω is stretched to double its length, then the resistance will become
 (a) $\frac{1}{2} \Omega$ (b) 2Ω (c) $\frac{1}{4} \Omega$ (d) 4Ω

24. Calculate current flowing in the circuit given below

- (a) 0.4 A (b) 10 A (c) 24 A
(d) 16 A



25. According to Faraday's law of electromagnetic induction

- (a) The direction of induced current is such that it opposes the cause producing it
(b) The magnitude of induced emf produced in a coil is directly proportional to the rate of change of magnetic flux
(c) The direction of induced emf is such that it opposes
(d) None of the above

26. Dynamo core is laminated because

- (a) magnetic field increases (b) magnetic saturation level in case increase
(c) residual magnetism in core decrease
(d) loss of energy in core due to eddy currents decrease

27. Which of the following is not a change?

- (a) Heating of wax (b) Rusting of iron
(c) Heating of limestone (d) Burning of candle

28. Which of the following is a reversible reaction?

- (a) $CaCO_3 + 2HCl \rightarrow CaCl_2 + H_2O + CO_2$
(b) $2Mg + O_2 \rightarrow 2MgO$
(c) $N_2 + 3H_2 \rightarrow 2NH_3$
(d) $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$

29. By dissolving metal oxide in water we get

- (a) acid (b) salt (c) base (d) None of these

30. Silver articles turn black after a period of time due to the formation of

- (a) silver nitrate (b) silver oxide (c) silver chloride (d) silver sulphide

31. A homogeneous mixture of two or more metals is

- (a) allotrope (b) alloy (c) isotope (d) None of these

32. Which amongst the given pair of compounds does not form a homologous series?

- (a) CH_3OH and $CH_3CH_2CH_2OH$ (b) CH_3CHO and CH_3CH_2CHO
(c) CH_3COOH and C_3H_7COOH (d) CH_3CH_2OH and CH_3CHO

33. Which out of the following is a unsaturated hydrocarbon?

- (a) Cyclobutane (b) Propyne (c) Hexanol (d) Ethane

34. Which of the following periodic property generally decreases along a period?

- (a) Metallic character (b) Electron affinity
(c) Ionization energy (d) Valency

35. The phloem in plants is responsible for

- (a) translocation of food (b) transport of H_2O

- (c) transport of O_2 (d) transport of amino acids
36. The longest cell in the body of an animal is
(a) osteocyte (b) neuron (c) chromatophore (d) blood corpuscle
37. Which cell stops dividing after birth?
(a) Glial cells (b) Epithelium (c) Liver (d) Neuron
38. The largest number of cell bodies of neurons in our body is found in
(a) brain (b) spinal cord (c) tongue (d) retina
39. Each diploid cell during oogenesis produces
(a) two functional eggs and two polar bodies
(b) one functional egg and three polar bodies
(c) four functional eggs
(d) None of the above
40. An organism having two same types of alleles of a gene in a cell, is known as
(a) hybrid (b) dihybrid (c) homozygous (d) heterozygous

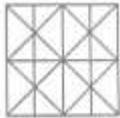
APTITUDE

Direction: (41 to 45) Read the following information carefully and answer the questions given below it. In a car exhibition, seven cars of seven different brands, viz Cadillac, Ambassador, Fiat, Maruti, Mercedes, Bedford and Fargo were displayed in a row, facing east direction such that :

- I. Cadillac was to the immediate right of Fargo.
 - II. Fargo was fourth to the right of Fiat.
 - III. Maruti was between the Ambassador and Bedford.
 - IV. Fiat, which was third to the left of Ambassador, was at one of the extreme ends.
41. Which of the following was the correct position of the Mercedes ?
(A) To the Immediate right of Fargo (B) To the Immediate left of Bedford
(C) Between Bedford and Fargo (D) Fourth to the right of Maruti
42. Which of the following is definitely true ?
(A) Fargo is between Ambassador and the Fiat
(B) Cadillac is to the immediate left of Mercedes
(C) Fargo is to the immediate right of Cadillac
(D) Maruti is fourth to the right of Mercedes
43. Which cars are neighbors of Cadillac ?
(A) Ambassador and maruti (B) Maruti and Fiat
(C) Fiat and Mercedes (D) Mercedes and Fargo

44. Which of the following is definitely true ?
 (A) Maruti is to the immediate left of Ambassador
 (B) Bedford is to the immediate left of Fiat.
 (C) Bedford is at one of the ends (D) Fiat is second to the right of Maruti
45. Which of the following groups of cars is to the right of the Ambassador ?
 (A) Cadillac, Fargo and Maruti (B) Maruti, Bedford and Fiat
 (C) Mercedes, Cadillac and Fargo (D) Bedford, Cadillac and Fargo
46. Which two months in a year have the same calendar?
 (A) June, October (B) April, November (C) April, July (D) October, December

47. What is the number of straight lines in the following figure?



- (A) 11 (B) 14 (C) 16 (D) 17
48. If a clock shows 04:28 then its mirror image will be?
 (A) 07 : 42 (B) 07: 32 (C) 08: 32 (D) 08: 42
49. Kishen walks 10 km towards North. From there, he walks 6 km towards South. Then he walks 3 km towards East. How far and in which direction is he with reference to his starting point?
 (A) 5 km, North (B) 5 km, North-East (C) 7 km, East (D) 7 km, West
50. Select a figure from the four alternatives, which when placed in the blank space of figure (X) would complete the pattern.



(X)



(A)



(B)



(C)



(D)