

VISA

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4 Year

All India Rank in IIT-JEE	Scholarship	Total (in four years)
AIR 1	Rs. 10,000/month	Rs. 4,80,000/-
AIR 2	Rs. 7,500/month	Rs. 3,60,000/-
AIR 3	Rs. 6,000/month	Rs. 2,88,000/-
AIR 4 -10	Rs. 5,000/month	Rs. 2,40,000/-
AIR 11- 20	Rs. 3,000/month	Rs. 1,44,000/-
AIR 21-30	Rs. 1,500/month	Rs. 72,000/-
AIR 31-50	Rs. 1,000/month	Rs. 48,000/-
AIR 51-100	Rs. 500/month	Rs. 24,000/-

* Terms & Conditions apply

Model Test Paper-II **Four Year Programme**

Name of the Student :

Reg. No. :

Duration : 1.30 hours

Max. Marks : 225

Please read the instructions carefully. You are allotted 3 minutes specifically for this purpose.

INSTRUCTIONS :

1. This Question Paper contains 75 Questions.
2. Each question has 4 choices for its answer (A), (B), (C) and (D).
3. Only ONE of them is the right answer.
4. There is **no negative marking**.
5. For each question you will be awarded +3 marks.
6. In all other cases you will be awarded 0 marks.
7. Use HB pencil to fill the bubble corresponding to correct answer.
8. *You should submit the question paper & answer sheet after the completion of the test to the invigilator.*
9. *You should keep the question paper & answer sheet clean. Rough work must be done in the space provided.*

184, Zone - 1, M.P. Nagar, Bhopal - 11,

Phone - (0755) 4273406, 4274846,

e-mail : admin@visioninfinity.com

visit us at : www.visioninfinity.com

The bi-Tech Institute

VISION
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Mathematics

1. Square root of $\frac{256}{441}$ is :
- (A) $\frac{14}{21}$ (B) $\frac{16}{21}$
(C) $\frac{16}{31}$ (D) $\frac{17}{31}$
2. The value of $[(6^2 + 8^2)^{1/2}]^3$ is :
- (A) 216 (B) 512
(C) 1000 (D) 729
3. The smallest number which when multiplied with 3600 will makes the product a perfect cube is :
- (A) 30 (B) 60
(C) 90 (D) 120.
4. The value of x, if $2^{x-3} = 1$ is :
- (A) 1 (B) 2
(C) 3 (D) 4.
5. If $x^2 + \frac{1}{x^2} = 27$, then the value of $x - \frac{1}{x}$ is :
- (A) ± 7 (B) ± 6
(C) ± 5 (D) ± 4
6. If $x + y = 12$ and $xy = 32$, then $x^2 + y^2 =$
- (A) 40 (B) 60
(C) 80 (D) 100
7. The value of (10.2×9.8) is :
- (A) 98.96 (B) 99.6
(C) 99.92 (D) 99.96.
8. Factorize : $8x^2 - 18x + 9$
- (A) $(4x - 3)(2x + 3)$ (B) $(8x - 1)(x - 9)$
(C) $(8x - 3)(x - 3)$ (D) $(2x - 3)(4x - 3)$

9. Four fifths of a number is greater than three fourths of the number by 4. The number is :
 (A) 12 (B) 64
 (C) 80 (D) 102.
10. Hari buys a clock for Rs. 80 and sells it for Rs. 100. His gain percent is :
 (A) 25% (B) $33\frac{1}{2}\%$
 (C) 20 % (D) $37\frac{1}{2}\%$
11. The compound interest on Rs. 40000 at 10% per annum for 2 years, compounded annually is :
 (A) Rs. 8000 (B) Rs. 8400
 (C) Rs. 8350 (D) Rs. 8640.
12. The lengths of the diagonals of a rhombus are 16cm and 12cm. The length of each side of the rhombus is :
 (A) 8cm (B) 9cm
 (C) 10cm (D) 12cm.
13. The maximum length of a pencil that can be kept in a rectangular box of dimensions $12\text{cm} \times 9\text{cm} \times 8\text{cm}$ is :
 (A) 13cm (B) 17cm
 (C) 18cm (D) 19cm.
14. Three cubes of iron whose edges are 6cm, 8cm and 10cm respectively are melted and formed into a single cube. The edge of the new cube formed is :
 (A) 12cm (B) 14cm
 (C) 16cm (D) 18cm.
15. What number should be subtracted from $-\frac{3}{5}$ to get 2 ?
 (A) $-\frac{7}{5}$ (B) $-\frac{13}{5}$
 (C) $\frac{13}{5}$ (D) $\frac{7}{5}$
16. The value of $(3^{-1} + 4^{-1})^{-1} \times 5^{-1}$ is :
 (A) $\frac{7}{10}$ (B) $\frac{12}{35}$
 (C) $\frac{7}{5}$ (D) $\frac{7}{15}$

17. Which of the following number is a perfect square :
- (A) 153 (B) 181
(C) 223 (D) 225.
18. $\sqrt[3]{5832} = ?$
- (A) 22 (B) 18
(C) 16 (D) 14.
19. $(2m^2 - 3n^2)(3m^2 + 2n^2) = ?$
- (A) $6(m^4 - n^4)$ (B) $-5m^2n^2$
(C) $6m^4 - 5m^2n^2 - 6n^4$ (D) $4m^4 - 5m^2n^2 + 9n^4$
20. Two complementary angles differ by 18° . Then the angles are :
- (A) $54^\circ, 36^\circ$ (B) $56^\circ, 74^\circ$
(C) $34^\circ, 52^\circ$ (D) $30^\circ, 48^\circ$.
21. The lateral surface area of a right circular cylinder with base radius 7 cm and height 10 cm is :
- (A) 440 CM^2 (B) 404 cm^2
(C) 240 cm^2 (D) none
22. Ratio of lateral surface areas of two cylinders with equal heights is :
- (A) $H : h$ (B) $R : r$
(C) $R^2 : r^2$ (D) none
23. Ratio of volumes of two cylinders with equal radii are :
- (A) $R : r$ (B) $H : h$
(C) $R^2 : r^2$ (D) none
24. The base radius of a cylinder is $1\frac{2}{3}$ times its height. The cost of painting its CSA at 2 paise / cm^2 is Rs. 92.40. The volume of the liquid is .
- (A) 80850 cm^3 (B) 80580 cm^3
(C) 80508 cm^3 (D) none
25. Lateral surface area of cylinder is 176 cm^2 and base area 38.5 cm^2 . Then its volume is
- (A) 830 cm^3 (B) 380 cm^3
(C) 308 cm^3 (D) 803 cm^3

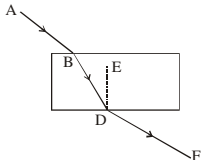
26. A cylinder vessel contains 49.896 litres of liquid. Cost of painting its CSA at 2 paise/sq cm is Rs. 95.04. Then its total surface area is .
 (A) 5724 cm² (B) 7524 cm²
 (C) 5742 cm² (D) none
27. The Ratio of base radius and height of a cone is 3 : 4. If the cost of smoothening the CSA at 5 paise/sq cm is Rs. 115.50. Then volume of liquid is .
 (A) 12963 cm³ (B) 12693 cm³
 (C) 12936 cm³ (D) none
28. The cost of painting the CSA of cone at 5 ps/cm² is Rs. 35.20. The volume of the cone its slant height being 25 cm is :
 (A) 1223 cm² (B) 1232 cm²
 (C) 1323 cm² (D) 1332 cm²
29. From a circle of radius 15 cm a sector with 216° angle is cut out and its bounding radii are bent so as from a cone. Then its volume is:
 (A) 1081.3 cm³ (B) 1071.3 cm³
 (C) 1018.3 cm³ (D) none
30. In the figure, P is the midpoint of AB. Then $\frac{\widehat{AC}}{\widehat{BC}}$:
 (A) 2 : 1 (B) 1 : 1
 (C) 1 : 2 (D) 1 : 3



SCIENCE

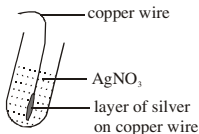
31. The most prominent group of stars that form a part of the constellation Ursa major is known as :
 (A) Polaris (B) Big Dipper
 (C) Small Dipper (D) Rigel.
32. Which of the following planet was discovered only after the telescopes became available to observe the night sky ?
 (A) Mercury (B) Mars
 (C) Jupiter (D) Uranus.

33. Which of the following planets appear brightest ?
 (a) Mercury (B) Venus
 (C) Mars (D) Jupiter.
34. Which of the following is not based on the principle of refraction of light ?
 (A) Microscopes (B) Telescopes
 (C) Mirror (D) Prism.
35. In the rectangular glass slab shown, which ray represents the emergent ray ?
 (A) AB
 (B) BD
 (C) DF
 (D) AB and BD.
36. The point of the lens through which light goes undeviated after refraction is known as :
 (A) Optical centre (B) Centre of curvature
 (C) Focus (D) Pole.
37. A camera has :
 (A) Concave lens (B) Convex lens
 (C) Plane mirror (D) Concave mirror.
38. Which of the following cell is not a primary cell ?
 (A) Voltaic cell (B) Daniel cell
 (C) Dry cell (D) Lead storage battery.
39. Which of the following is not an insulator ?
 (A) Mica (B) Rubber
 (C) Glass (D) Graphite.
40. Which of the following has highest calorific value ?
 (A) Cowdung cake (B) Wood
 (C) Coal (D) Petrol.
41. Which of the following substance is non-magnetic ?
 (A) Iron (B) Nickel
 (C) Cobalt (D) Copper.
42. A current carrying wire behaves like a
 (A) Cell (B) Battery
 (C) Magnet (D) Insulator.



43. Biogas can be used for
1. Cooking food
 2. Street lighting
 3. Running engines
- The correct statements are
- (A) only 1 and 2 (B) only 2 and 3
(C) only 1 and 3 (D) 1, 2 and 3.
44. Electromagnets are used in
1. Electric bells
 2. Telephones
 3. Speakers
- The correct statements are
- (A) only 1 and 2 (B) only 2 and 3
(C) only 1 and 3 (D) 1, 2, and 3.
45. The non-metal which acts as a conductor of electricity is :
- (A) Silver (B) Copper
(C) Aluminium (D) Graphite.
46. The experimental evidence for the existence of atomic nucleus comes from :
- (A) Millikan's oil drop method
(B) Atomic absorption spectroscopy
(C) The magnetic bending of cathode rays
(D) Rutherford alpha scattering by a thin metal foil.
47. Number of electrons in the outermost orbit of the element of atomic number 17 is :
- (A) 7 (B) 5
(C) 3 (D) 2.
48. Chlorine atom differs from chloride ion in the number of :
- (A) Protons (B) Neutrons
(C) Electrons (D) Protons and electrons
49. Element X is strongly electropositive and element Y is strongly electronegative. Both are univalent. The compound formed would be :
- (A) $X^+ Y$ (B) $X^- Y^+$
(C) $X^- Y$ (D) $X \rightarrow Y$.
50. When metals react with non-metals, the metal atoms tend to :
- (A) Lose electrons (B) Gain electrons
(C) Share electrons (D) None.
51. Marsh gas is
- (A) Methane (B) Ethane
(C) Pentane (D) Octane.

52. The maximum number of electrons that the M shell can hold is
 (A) 2 (B) 8
 (C) 18 (D) 32.
53. Subatomic particle is/are :
 (A) Electron, proton only (B) Only electron
 (C) Proton only (D) Electron, proton, neutron.
54. Diamond and graphite are two allotropes of carbon :
 (A) Crystalline (B) Amorphous
 (C) Both (a) and (b) (D) None of these.
55. An atom has net charge of 1. It has 18 electrons and 20 neutrons. Its mass number is :
 (A) 37 (B) 35
 (C) 38 (D) 20.
56. Name the type of reaction observed.
 (A) Simple displacement
 (B) Double displacement
 (C) Synthesis reaction
 (D) All of the above.



57. The number of electrons possessed by sodium ion $[\text{Na}^+]$ is :
 (A) 10 (B) 12
 (C) 11 (D) 13.
58. The process of heating substances in the absence of air is called :
 (A) Destructive Distillation (B) Filtration
 (C) Decantation (D) Separation.
59. The commercial name for dry ice is
 (A) Drikold (B) Cold
 (C) Ice land spar (D) Washing Soda.

60. Which is different in isotopes of an element :
(A) Atomic number (B) Mass number
(C) Number of protons (D) Number of electrons.
61. The main function of a plasma membrane is to
(A) prevent water from entering or leaving
(B) control what goes into and out of the cell
(C) act as a sieve, allowing only lipids to pass
(D) move the cell from place to place.
62. Cell theory was propounded by
(A) Schleiden and Schwann (B) Waston and Crick
(C) Mendel and Morgan (D) Wallace and Darwin.
63. Chromosomes are concerned with
(A) respiration (B) assimilation
(C) transmission hereditary-characters (D) nutrition.
64. Penicillin was first discovered by
(A) Alexander Fleming (B) Robert Koch
(C) S. Waksman (D) Max Theiler.
65. Jaundice is a disease of
(A) kidney (B) pancreas
(C) liver (D) duodenum.
66. Which is a renewable source?
(A) Water (B) Coal
(C) Fuels (D) Minerals.
67. Main cause of soil erosion
(A) afforestation (B) less rains
(C) thinning of ozone (D) deforestation.
68. Aims of plant breeding are to produce
(A) disease-free varieties (B) high-yielding varieties
(C) early-maturing varieties (D) all of the above.
69. Removal of stamens in an inter-sexual flower before they dehisce is called
(A) protogyny (B) protandry
(C) inducing male sterility (D) emaculation.

70. To digest food, the saprophytic fungi secrete -
(A) Hormones (B) Enzymes
(C) Sugar exudates (D) Vitamins
71. The smallest cell in the world is:
(A) Mycoplasma (B) Virus
(C) Prions (D) Bacteria.
72. When bacteria are rod like, they are called :
(A) bacilli (B) cocci
(C) spirilla (D) vibrios.
73. Genetic material of virus is :
(A) Protein (B) Carbohydrate
(C) Fat (D) DNA
74. DNA is present in :
(A) Lysosomes (B) Chromosomes
(C) Golgi complex (D) Endoplasmic reticulum
75. Which cell organelle is absent in the leaves of onion?
(A) Nucleus (B) Cell wall
(C) Centriole (D) Endoplasmic reticulum.

ANSWER**4 Year**

- | | | | | |
|-------|-------|-------|-------|-------|
| 1. B | 2. C | 3. B | 4. C | 5. C |
| 6. C | 7. D | 8. D | 9. C | 10. A |
| 11. B | 12. C | 13. B | 14. A | 15. D |
| 16. B | 17. D | 18. B | 19. C | 20. A |
| 21. A | 22. B | 23. C | 24. D | 25. C |
| 26. B | 27. A | 28. B | 29. D | 30. C |
| 31. B | 32. D | 33. B | 34. C | 35. C |
| 36. A | 37. B | 38. D | 39. D | 40. D |
| 41. D | 42. C | 43. D | 44. D | 45. D |
| 46. D | 47. A | 48. C | 49. A | 50. A |
| 51. A | 52. C | 53. D | 54. A | 55. A |
| 56. A | 57. A | 58. A | 59. A | 60. B |
| 61. B | 62. A | 63. C | 64. A | 65. C |
| 66. A | 67. D | 68. D | 69. D | 70. B |
| 71. A | 72. A | 73. D | 74. B | 75. C |