

# VISA

## Vision Infinity Scholarship Award

Students of Vision Infinity who secure All India Rank in IIT-JEE within top 100, will be Awarded scholarship for four years during B.Tech in IIT

# 3 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

### Three 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

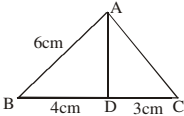
visit us at : [www.visioninfinity.com](http://www.visioninfinity.com)

The IIT-Tech Institute

**VISION**  
**Infinity**

*A synonym of success...*

## Mathematics

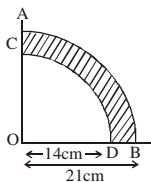
1. The area of an isosceles triangle is  $60 \text{ cm}^2$  and the length of each one of its equal sides is  $13 \text{ cm}$ . Then its base is equal to :  
(A)  $24 \text{ cm}$  or  $5 \text{ cm}$  (B)  $24 \text{ cm}$  or  $10 \text{ cm}$   
(C)  $12 \text{ cm}$  or  $10 \text{ cm}$  (D)  $12 \text{ cm}$  or  $5 \text{ cm}$ .
2. If  $\sqrt{2}x - \sqrt{3}y = 0$   
 $\sqrt{3}x + \sqrt{2}y = 0$ . Then the value of  $x$  and  $y$  are :  
(A)  $x = 0, y = \sqrt{2}$  (B)  $x = 0, y = 0$   
(C)  $x = \sqrt{3}, y = 0$  (D)  $x = \sqrt{2}, y = \sqrt{6}$ .
3. In the given figure,  $AD$  is the bisector of  $\angle A$ . If  $BD = 4 \text{ cm}$ ,  $DC = 3 \text{ cm}$  and  $AB = 6 \text{ cm}$ , determine  $AC$ .  
(A)  $4 \text{ cm}$  (B)  $4.5 \text{ cm}$   
(C)  $3 \text{ cm}$  (D)  $3.5 \text{ cm}$ .
- 
4. The value of  $\sqrt{m^2 n^2} \times \sqrt[6]{m^2 n^2} \times \sqrt[3]{m^2 n^2}$  is :  
(A)  $m^2 n^2$  (B)  $mn$   
(C)  $\sqrt[10]{m^2 n^2}$  (D)  $\sqrt[8]{m^2 n^2}$
5. If  $(x + 3)$  is a factor of  $3x^2 + Kx + 6$  then the value of  $K$  is :  
(A)  $12$  (B)  $11$   
(C)  $10$  (D)  $9$ .
6. If  $2^{x-7} \times 5^{x-4} = 1250$ . Then the value of  $x$  is :  
(A)  $4$  (B)  $6$   
(c)  $8$  (D)  $10$ .
7. In  $\triangle ABC$ ,  $\angle A - \angle B = 33^\circ$ ,  $\angle B - \angle C = 18^\circ$ . Then the measured of  $\angle C$  is :  
(A)  $88^\circ$  (B)  $55^\circ$   
(C)  $37^\circ$  (D)  $45^\circ$ .

8. Cards marked 1, 2, 3,....., 50 are placed in a box and mixed thoroughly. One card is drawn from the box. Then the probability that number on the card is divisible by 7 is :

- (A)  $\frac{4}{50}$  (B)  $\frac{6}{50}$   
 (C)  $\frac{7}{50}$  (D)  $\frac{8}{50}$

9. In the given figure ABCD is a flower bed. If  $OB = 21$  cm and  $OD = 14$  cm. Then the area of the bed  $\left(\pi = \frac{22}{7}\right)$  is :

- (A)  $192.5 \text{ cm}^2$  (B)  $180 \text{ cm}^2$   
 (C)  $190 \text{ cm}^2$  (D)  $180.5 \text{ cm}^2$



10. A two digit number is multiplied by 8 and adding 1 or by multiplying the difference of the digits by 13 and adding 2. Then the number is :

- (A) 31 (B) 41  
 (C) 51 (D) 61.

11. If  $\sqrt{5} = 2.236$  and  $\sqrt{3} = 1.732$ , then the value of  $\frac{2}{\sqrt{5} + \sqrt{3}} + \frac{7}{\sqrt{5} - \sqrt{3}}$  is :

- (A) 14 (B) 15.39  
 (C) 14.392 (D) 16.

12. The value of  $\frac{1}{\sqrt{3} + \sqrt{2} - 1}$  on simplifying upto 3 decimal places, given that

$\sqrt{2} = 1.4142$  and  $\sqrt{6} = 2.4495$ , is :

- (A) 0.166 (B) 0.366  
 (C) 0.466 (D) 0.566.

13. A leap of coconuts is divided into groups of 2, 3 and 5 and each time one coconut is left over. The least number of coconuts in the leap is :

- (A) 11 (B) 21  
 (C) 31 (D) 41.

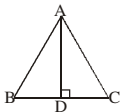
14. If one root of  $x^2 - 4x + k = 0$  is 6 then the value of k is :

- (A) 12 (B) 2  
 (C) 2 (D) 12.

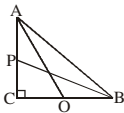
15. The value of  $\frac{x^{a+b} \cdot x^{b+c} \cdot x^{c+a}}{(x^a \cdot x^b \cdot x^c)}$  is :
- (A)  $x^2$  (B)  $x^{a+b+c}$   
 (C)  $x^{abc}$  (D)  $x^0$
16. If the expression  $(125 - x^3) = (5 - x)(x^2 + ax + b)$ , then the value of  $a$  is :
- (A) 4 (B) 2  
 (C) 7 (D) 5.
17. The number of sides of a regular polygon, if each of its interior angles is  $135^\circ$ , is given by:
- (A) 4 (B) 6  
 (C) 8 (D) 10.
18. The locus of a point equidistant from two fixed points P and Q is :
- (A) line parallel to PQ (B) circle  
 (C) line through P and  $\perp$  PQ (D) perpendicular bisector of  $\overline{PQ}$
19. The value of  $\sqrt[4]{625}$  is :
- (A) 15 (B) 5  
 (C) 10 (D) None of these.
20. In  $\triangle ABC$ , AD is drawn such that  $\triangle ABD$  and  $\triangle ACD$  are equal in area then AD is :
- (A) any segment drawn from A to BC (B) the bisector of  $\angle BAC$   
 (C) A median of  $\triangle ABC$  (D) none of these.
21. The triangle with measurements  $a = (2p - 1)$  cm,  $b = 2\sqrt{2p}$ ,  $c = (2p + 1)$  cm is :
- (A) equilateral (B) right angled isosceles  
 (C) isosceles (D) right angled triangle.
22. In a rhombus the length of diagonals are 12 cm and 16 cm. Then the measure of its side is:
- (A) 28 cm (B) 4 cm  
 (C) 10 cm (D) 6 cm
23. A beam of length 10 m reaches the top of building 6 m from ground. Then the horizontal distance between them is:
- (A) 8 m (B) 16 m  
 (C) 4 m (D) 2 m

24. The area of triangle with side  $a$  is  $\frac{\sqrt{3}}{4}a^2$ . Then its altitude is:

- (A)  $\sqrt{3}a$  (B)  $\frac{\sqrt{3}a}{2}$   
 (C)  $\frac{2a}{\sqrt{3}}$  (D)  $\frac{\sqrt{2}a}{3}$



25. In equilateral  $\triangle ABC$ ,  $AD$  is altitude. Then  $4AD^2 =$   
 (A)  $2BD^2$  (B)  $2DC^2$   
 (C)  $BC^2$  (D)  $3AB^2$



26. In the figure,  $P$  and  $Q$  are midpoints of  $AC$  and  $BC$ . Then  $5AB^2 =$   
 (A)  $4(AQ^2 + BP^2)$  (B)  $4(AC^2 + BC^2)$   
 (C)  $AP^2 + BQ^2$  (D)  $PC^2 + CQ^2$

27. Two vertices of triangle are  $(1, 4)$  and  $(5, 2)$  and medians intersect at  $(0, 3)$ . Then the third vertex is:

- (A)  $(4, 15)$  (B)  $(4, 15)$   
 (C)  $(-4, 15)$  (D)  $(4, 15)$

28. The coordinates of the centroid of a triangle whose vertices are  $(4, 4)$ ,  $(2, 2)$  and  $(6, 12)$  is:

- (A)  $(6, 6)$  (B)  $(6, 0)$   
 (C)  $(0, 6)$  (D) none

29. One end of diameter of a circle is  $(2, 3)$  and the centre is  $(2, 5)$ . The coordinates of the other end is:

- (a)  $(6, 7)$  (b)  $(6, 7)$   
 (c)  $(6, 7)$  (d) none

30. The coordinates of the points of trisection of a segment joining  $A(3, 2)$  and  $(9, 5)$  is:

- (A)  $(3, 1)$ ,  $(4, 5)$  (B)  $(1, 3)$ ,  $(5, 4)$   
 (C)  $(1, 3)$ ,  $(4, 5)$  (D)  $(3, 1)$ ,  $(5, 4)$

### SCIENCE

31. The symbol of S.I. unit of temperature is :

- (A)  $^{\circ}\text{C}$  (B)  $\text{F}$   
 (C)  $\text{K}$  (D)  $\text{R}$ .

32. Which of the following physical quantity is a scalar quantity ?  
(A) Distance (B) Velocity  
(C) Acceleration (D) Force.
33. The acceleration of a body of mass 5kg if a force of 200N is applied on it is :  
(A)  $20 \text{ m/s}^2$  (B)  $30 \text{ m/s}^2$   
(C)  $40 \text{ m/s}^2$  (D)  $50 \text{ m/s}^2$ .
34. A ball is thrown vertically upwards. The acceleration due to gravity :  
(A) is in the direction opposite to the direction of its motion  
(B) is in the same direction as the direction of its motion  
(C) increases as it comes down  
(D) becomes zero at the highest point.
35. The power of a pump which can lift 100kg of water to store it in a water tank at a height of 19m in 25sec is ( $g = 10\text{m/s}^2$ ) :  
(A) 300 W (B) 460 W  
(C) 660 W (D) 760 W.
36. Which of the following is carried by the waves from one place to another ?  
(A) Mass (B) Velocity  
(C) Wavelength (D) Energy.
37. A wave pulse on a string moves a distance of 8m in 0.05 sec. The velocity of the pulse is :  
(A) 80 m/s (B) 160 m/s  
(C) 200 m/s (D) 240 m/s.
38. A car is moving with a uniform velocity of 54km/h. The kinetic energy of a boy of mass 40kg sitting in the car is :  
(A) 1000 J (B) 1500 J  
(C) 2500 J (D) 4500 J.
39. The force of gravitation between two bodies varies with r as :  
(A)  $r^2$  (B) r  
(C)  $\frac{1}{r}$  (D)  $\frac{1}{r^2}$
40. Which of the following physical quantity has no unit ?  
(A) Density (B) Relative density  
(C) Buoyant force (D) Pressure.

41. An object whose speed is constant  
(A) must be accelerated (B) might be accelerated  
(C) cannot be accelerated (D) has a constant velocity.
42. The rate of change of momentum gives  
(A) impulse (B) Force  
(C) Acceleration (D) Velocity
43. Waves transfer the following from one place to another :  
(A) Mass (B) Velocity  
(C) Wavelength (D) Energy.
44. When a body falls freely :  
(A) its potential energy is converted into kinetic energy  
(B) its kinetic energy is converted into potential energy  
(C) its mechanical energy is converted into heat energy  
(D) its total energy increases.
45. The action and reaction forces referred to Newton's third law :  
(A) must act on the same object  
(B) may act on different objects  
(C) must act on different objects  
(D) need not be equal in magnitude but must have the same direction.
46. Which of the following pairs does not contain both elements ?  
(A) carbon, silicon (B) helium, nitrogen  
(C) bronze, zinc (D) copper, silver.
47. Which of the following is a triatomic molecule ?  
(A) carbon dioxide (B) ammonia  
(C) helium (D) sugar.
48. The number of moles in 6.4g of  $\text{SO}_2$  is :  
(A) 1 (B) 0.1  
(C) 10 (D) 6.4.
49. The weight of 0.50 mole of  $\text{CH}_4$  is :  
(A) same as 0.50 mole of CO (B) same as that of 0.50 mole of  $\text{O}_2$   
(C) same as that of 0.125 mole of  $\text{SO}_2$  (D) same as that of 1 mole of carbon.

50. Which of the following weight maximum :  
(A) 1 mole of  $\text{NH}_3$  (B) 0.5 mole of  $\text{C}_2\text{H}_6$   
(C) 0.1 mole of  $\text{CO}_2$  (D) 0.5 mole of  $\text{H}_2\text{O}$ .
51.  ${}_{17}\text{Cl}^{35}$  and  ${}_{17}\text{Cl}^{37}$  are examples of :  
(A) isotopes (B) isobars  
(C) isomers (D) Both A and B .
52. Electron was discovered by :  
(A) Rutherford (B) Thomson  
(C) Crooke (D) Hurray Gellmenn.
53. The radius of the atom is of the order of :  
(A)  $10^{15}$  m (B)  $10^{10}$  m  
(C)  $10^9$  m (D)  $10^{12}$  m.
54. When a solid vaporises directly without melting, it is known as :  
(A) Evaporation (B) Sublimation  
(C) Sedimentation (D) Saponification.
55. The maximum number of electrons in second shell are :  
(A) 2 (B) 8  
(C) 18 (D) 32.
56. Which of the following can lose two electrons to attain the configuration of argon ?  
(A) Mg (B) Br  
(C) S (D) Ca.
57. An atom of an element has 26 electrons and has a mass number 56. The nucleus of this atom contains \_\_\_\_\_ neutrons.  
(A) 26 (B) 36  
(C) 30 (D) 56.
58. Which of the following is not colloid :  
(A) Milk (B) Blood  
(C) Cheese (D) NaCl solution.
59. A molecule of  $\text{N}_2$  has  
(A) a single bond (B) a double bond  
(C) a triple bond (D) a co-ordinate covalent bond.

60. Sodium hydride has  
(A) an ionic bond (B) a covalent bond  
(C) a hydrogen bond (D) a coordinate covalent bond.
61. The animals which live on the floor of sea are referred to as :  
(A) Benthic (B) Pelagic  
(C) Planktonic (D) Terrestrial.
62. To which group of animals, the nematocysts are unique :  
(A) Cnidaria (B) Porifera  
(C) Platyhelminthes (D) Annelida.
63. *Hydra* is :  
(A) Marine, radial symmetrical and diploblastic  
(B) Fresh water, biradial symmetrical and triploblastic  
(C) Fresh water, radial symmetrical and diploblastic  
(D) Marine, radial symmetrical and triploblastic.
64. Which of the following is called 'an organelle within an organelle'?  
(A) Plastid (B) Ribosome  
(C) Lysosome (D) Microsome.
65. Which of the following organelles lack membranes?  
(A) Ribosome (B) Mitochondria  
(C) Golgi complex (D) Nucleus.
66. Bone is made up of which type of cells :  
(A) Osteoblast & osteoclast (B) Chondroblast  
(C) Sarcomere (D) Chondrocytes.
67. RBC of human are characterised by :  
(A) Circular, biconcave & denucleated (B) Circular, biconvex & denucleated  
(C) Oval, biconcave & denucleated (D) Oval, biconvex & denucleated.
68. LPG is:  
(A) Low price gas (B) Fossil fuel  
(C) Low pressure gas (D) Biogas.

69. Fertility of paddy fields is improved by addition of :  
(A) Rhizobia (B) Gypsum  
(C) Sodium sulphate (D) Blue-Green Algae
70. The fish used for destroying mosquito larvae is :  
(A) Gambusia fish (B) Scoliodon  
(C) Jelly fish (D) Portuguese man of war
71. Gymnosperms are :  
(A) Nonmuscular plants (B) Seedless plants  
(C) Plants which bear naked seeds (D) Flowering plants.
72. Mosquitoes spread :  
(A) Influenza (B) Rabies  
(C) Malaria (D) AIDS.
73. Animals that live in tree are called :  
(A) Arboreal (B) Volant  
(C) Cursorial (D) Fossorial.
74. Murrah is a high-yielding breed of :  
(A) Cow (B) Hen  
(C) Buffalo (D) Sheep.
75. Genes are located on the :  
(A) Nuclear membrane (B) Chromosomes  
(C) Iysosomes (D) Cell membrane.

**ANSWER****3 Year**

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