

IIT-AIIMS 2025 - SCREENING TEST

05-02-2023

QUESTION PAPER

&

ANSWER KEY

SECTION - A (PHYSICS)

1. A concave mirror of focal length 20cm forms an image having twice the size of object. For the virtual position of object, the position of object will be at

1) 25 cm 2) 40 cm 3) 10cm 4) at infinity

Ans: 3

2. The magnetic effect of current was discovered by

1) Maxwell 2) Fleming 3) Oersted 4) Faraday

Ans: 3

3. A positively charged particle projected towards west is deflected towards north by a magnetic field. The direction of magnetic field is

1) towards south 2) towards east 3) downwards 4) upward

Ans: 4

4. No force acts on a current carrying conductor when it is placed

1) perpendicular to the magnetic field
2) parallel to the magnetic field
3) far away from the magnetic field
4) inside a magnetic field

Ans: 2

5. An electromagnetic radiation of frequency n , wavelength λ , travelling with velocity v in air, enters a glass slab of refractive index μ . The frequency, wavelength and velocity of light in the glass slab will be respectively.

1) $\frac{n}{\mu}, \frac{\lambda}{\mu}$ and $\frac{v}{\mu}$ 2) $n, \frac{\lambda}{\mu}$ and $\frac{v}{\mu}$
3) $n, 2\lambda$ and $\frac{v}{\mu}$ 4) $\frac{2n}{\mu}, \frac{\lambda}{\mu}$ and v

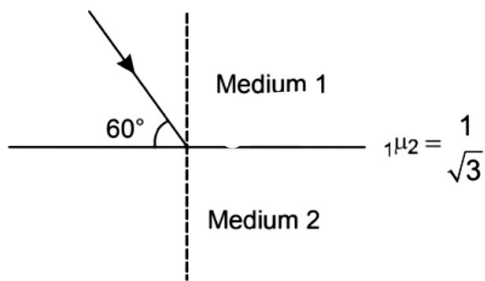
Ans: 2

6. A convex mirror of radius of curvature 1.6m has an object placed at a distance of 1m from it. The image is formed at a distance of

1) $\frac{8}{13}$ m in front of the mirror
2) $\frac{8}{13}$ m behind the mirror
3) $\frac{4}{9}$ m in front of the mirror
4) $\frac{4}{9}$ m behind the mirror

Ans: 4

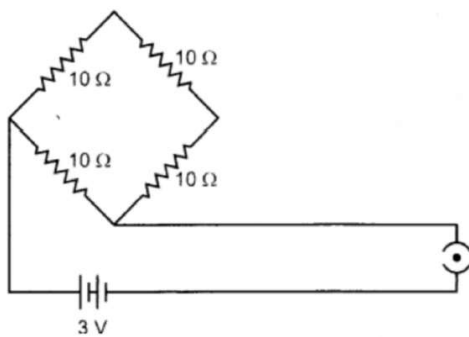
7. Consider the figure shown below & find out the angle of refraction



- 1) 0° 2) 30° 3) 45° 4) 60°

Ans: 4

8. Find the current drawn from the battery by the network of four resistors shown in the figure.



- 1) 0.3A 2) 0.4A 3) 0.2A 4) 0.1A

Ans: 2

9. Match the column

Column I

1. Electric bulb
2. Mixi
3. Electric iron
4. Storage battery while charging

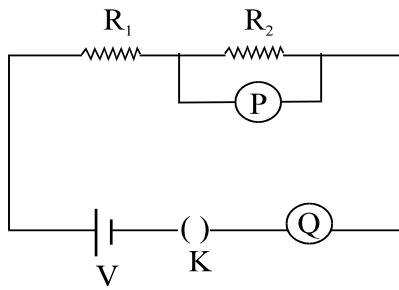
Column II

- p. Electric energy to heat
- q. Electric energy to light
- r. Electric energy to chemical energy
- s. Electric energy to mechanical energy

- 1) 1 - s, 2 - r, 3 - q, 4 - p
- 2) 1 - q, 2 - s, 3 - p, 4 - r
- 3) 1 - s, 2 - q, 3 - p, 4 - r
- 4) 1 - p, 2 - q, 3 - s, 4 - r

Ans: 2

10. Which are the instruments labelled as P and Q in the given circuit



- | | |
|------------------|---------------|
| 1) p - ammeter | Q - voltmeter |
| 2) p - voltmeter | Q - ammeter |
| 3) p - ammeter | Q - ammeter |
| 4) p - voltmeter | Q - voltmeter |

Ans: 2

11. The least distance of distinct vision of a young adult with normal vision is

- | | | | |
|--------|--------|---------|----------|
| 1) 25m | 2) 20m | 3) 25cm | 4) 20 cm |
|--------|--------|---------|----------|

Ans: 3

12. SI unit of acceleration is

- | | | | |
|---------------------|----------------------|--------|---------|
| 1) m/s ² | 2) km/h ² | 3) m/s | 4) km/s |
|---------------------|----------------------|--------|---------|

Ans: 1

13. A car starts from rest and accelerates in a straight line at a constnat rate of 4m/s² for 2 second. Final velocity of the car is

- | | | | |
|---------|-------------|----------|-----------------|
| 1) 8m/s | 2) 28.8km/h | 3) 12m/s | 4) Both 1 and 2 |
|---------|-------------|----------|-----------------|

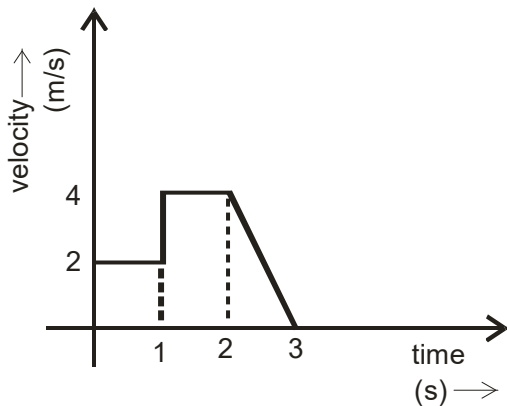
Ans: 4

14. A bus starting from rest and moving with uniform acceleration attains a speed of 30m/s in 2 minutes. The displacement of the bus is

- | | | | |
|----------|----------|----------|----------|
| 1) 1.8km | 2) 2.4km | 3) 0.5km | 4) 5.2km |
|----------|----------|----------|----------|

Ans: 1

15. From the following graph, displacement of the body when t = 2 second is:



- | | | | |
|-------|-------|-------|-------|
| 1) 8m | 2) 4m | 3) 9m | 4) 6m |
|-------|-------|-------|-------|

Ans: 4

16. Which of the following is wrong?
- 1) Rate of change of velocity is acceleration
 - 2) If acceleration and velocity are in opposite direction, then speed decreases
 - 3) If a body moves in the same direction then magnitude of displacement is greater than distance travelled
 - 4) Uniform circular motion is an accelerated motion

Ans: 3

17. If one ampere current flows through a conductor, the number of electrons flowing across the cross section of the conductor in 2 seconds is _____. (Take the charge on electron = $1.6 \times 10^{-19} \text{ C}$)

- 1) 1.6×10^{-19}
- 2) 1.25×10^{19}
- 3) 6.25×10^8
- 4) 3.2×10^{18}

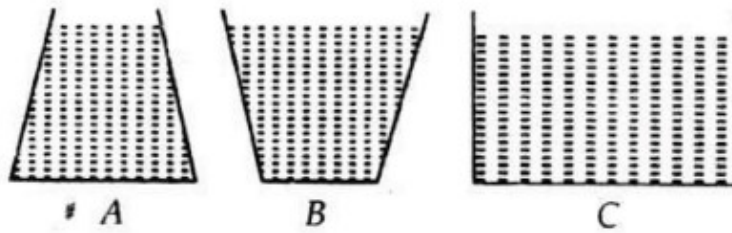
Ans: 1

18. Which of the following phenomena contributes significantly to the reddish appearance of the sun at sunrise or sunset?

- 1) Dispersion of light
- 2) Scattering of light
- 3) Total internal Reflection of light
- 4) Reflection of light from earth

Ans: 2

19. Three vessels A, B and C of different shapes contain a water upto the same height as shown in the figure, P_A , P_B and P_C be the pressure exerted by the water at the bottom of the vessels A, B and C respectively. Then



- 1) $P_A > P_B > P_C$
- 2) $P_B > P_C > P_A$
- 3) $P_C > P_B > P_A$
- 4) $P_A = P_B = P_C$

Ans: 4

20. Production of induced emf involves

- 1) Conversion of electrical energy into mechanical energy
- 2) Conversion of mechanical energy into electrical energy
- 3) Conversion of chemical energy into electrical energy
- 4) Conversion of electrical energy into chemical energy

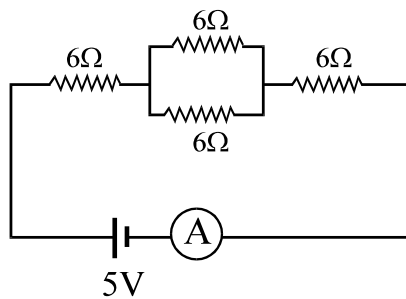
Ans: 2

SECTION - B (PHYSICS)

21. Mohan is observing his image in a plane mirror. The distance between the mirror and his image is 5m. If he moves 1m towards the mirror, then the distance between Mohan and his image in meter will be

Ans: 8

22. Find the effective resistance of the circuit



Ans: 15

23. A body moving with an initial velocity of 5m/s, undergoes a uniform acceleration. After 5 second its velocity becomes 25 m/s. Then average velocity of the body is

Ans: 15

24. An electric bulb marked 15 V is connected to a battery of 15 V which has a negligible resistance. If the resistance offered by the bulb is $5\ \Omega$ the power of the bulb is _____ W.

Ans: 45

25. The odometer of a car reads 30,000km at the start of a trip and 31200km at the end of the trip. Let 50km/h be the average speed of the driver and each day he travels only 6 hours, then how many days he took for the entire journey?

Ans: 4

26. A block of mass 2kg is moving along a horizontal surface. Work done by the gravity in joule when the block moves through a distance 5cm along the surface is ($g = 10\ \text{m/s}^2$)

Ans: 0

27. A particle starts from rest and moves with a constant acceleration $2\ \text{m/s}^2$. Displacement of the particle in first 4 seconds in meter is

Ans: 16

28. Gravitational force between two particles at a separation r is F . If the separation between the particles increases to $2r$ and one of the masses is halved then force between the two particles is $\frac{F}{n}$. The value of n is

Ans: 8

29. The average induced emf produced in a closed loop in 2s is 5V. The magnitude of change in flux in SI unit is

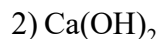
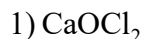
Ans: 10

30. A charge enters into a uniform magnetic field of 2T. Initial kinetic energy of the charge is 15J. Kinetic energy of the charge after 10s is $\frac{30}{x}$ J. The value of x is

Ans: 2

SECTION-A(CHEMISTRY)

31. A substance X is used in white- washing and is obtained by heating limestone in the absence of air. Identify X



Ans: 3

32. What type of chemical reaction take place when electricity is passed through water?

1) displacement

2) Combination

3) Decomposition

4) Double displacement

Ans: 3

33. Which of the following is incorrect about chemical equation?

1) Reactants are written on the left hand side

2) Products are written on the right hand side

3) Both 1 and 2

4) None of these

Ans: 4

34. Calcium oxide react vigorously with water to produce -----

1) Calcium carbonate

2) Calcium hydroxide

3) Calcium sulphate

4) Calcium nitrate

Ans: 2

35. When lead nitrate solution is mixed with potassium iodide solution to form an yellow precipitate. The resultant yellow precipitate compound is

1) Lead iodide

2) lead acetate

3) lead carbonate

4) lead oxide

Ans: 1

36. Rancidity can be prevented by adding

1) antirust solution

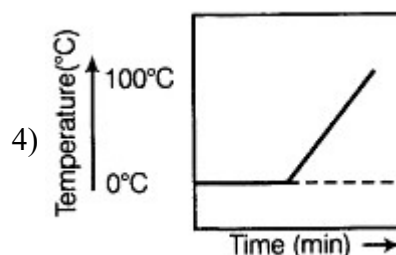
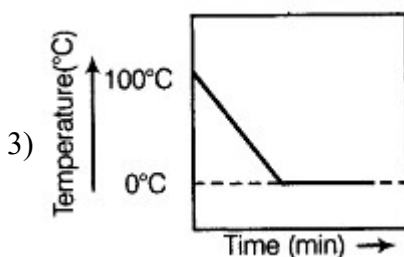
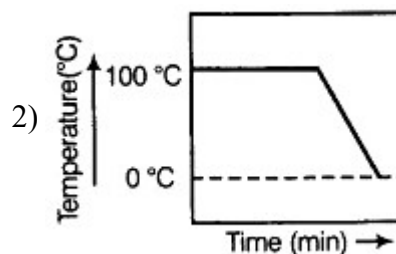
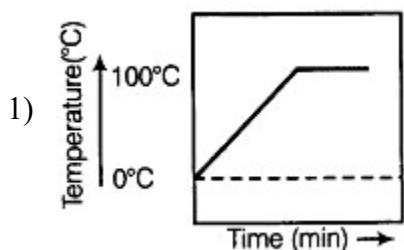
2) antioxidants

3) Oxygen

4) Hydrogen

Ans: 2

37. When a beaker containing ice and water is heated, then which of the following graph would correctly justify the result



Ans: 4

38. Match the following with SI unit's of given quantity

A

B

p) volume

i) g/mL

q) density

ii) L

r) mass

iii) kg

s) pressure

iv) g

v) kg/m³

vi) pascal

vii) bar

viii) m³

1) p - (ii), q - (i), r - (iv), s - (vii)

2) p - (ii), q - (v), r - (iii), s - (vii)

3) p - (viii), q - (v), r - (iii), s - (vi)

4) p - (viii), q - (i), r - (iii), s - (vi)

Ans: 3

39. Which one of the following statements is not true ?

1) The molecules in a solid vibrate about a fixed position

2) The molecules in a liquid are arranged in a regular pattern

3) The molecules in a gas exerts negligibly small forces on each other, except during collisions

4) The molecules of a gas occupy all the space available

Ans: 2

40. CNG is

- | | |
|----------------------------|---------------------------|
| 1) Complete natural gas | 2) Compressed natural gas |
| 3) Complicated natural gas | 4) Condensed natural gas |

Ans: 2

41. Which of the following is not an endothermic reaction?

- 1) $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
- 2) $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$
- 3) $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
- 4) $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$

Ans: 4

42. Which amongst the following is (are) double displacement reaction?

- i) $\text{Pb(s)} + \text{CuCl}_2(\text{aq}) \rightarrow \text{PbCl}_2(\text{aq}) + \text{Cu(s)}$
- ii) $\text{Na}_2\text{SO}_4(\text{aq}) + \text{BaCl}_2(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2\text{NaCl}(\text{aq})$
- iii) $\text{C(s)} + \text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g})$
- iv) $\text{CH}_4(\text{g}) + 2\text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\ell)$

- | | | | |
|-------------|------------|-------------|---------------|
| 1) i and iv | 2) ii only | 3) i and ii | 4) iii and iv |
|-------------|------------|-------------|---------------|

Ans: 2

43. Three beakers labelled as A, B and C each containing 25 mL of water. A small amount of NaOH, anhydrous CuSO_4 and NaCl were added to the beakers A, B and C respectively. It was observed that there was an increase in the temperature of the solutions contained in beakers A and B, whereas in case of beaker C, the temperature of the solution fall. Which one of the following statement(s) is(are) correct?

- i) In beakers A and B, exothermic reaction has occurred
- ii) In beakers A and B, endothermic reaction has occurred
- iii) In beaker C exothermic reaction has occurred
- iv) In beaker C endothermic reaction has occurred

- | | | | |
|-----------|------------|-------------|---------------|
| 1) i only | 2) ii only | 3) i and iv | 4) ii and iii |
|-----------|------------|-------------|---------------|

Ans: 3

44. What happens when a solution of an acid is mixed with a solution of a base in a test tube?

- i) The temperature of the solution increases
- ii) The temperature of the solution decreases
- iii) The temperature of the solution remains the same
- iv) Salt formation takes place

- | | | | |
|-----------|--------------|---------------|-------------|
| 1) i only | 2) i and iii | 3) ii and iii | 4) i and iv |
|-----------|--------------|---------------|-------------|

Ans: 4

45. Reaction between X and Y, forms compound Z. The substance, X loses an electron and Y gains an electron. Which of the following properties is not shown by Z?

- 1) Has high melting point
- 2) Has low melting point
- 3) Conducts electricity in molten state
- 4) Occurs as solid

Ans: 2

46. Match the chemical substances given in Column (A) with their appropriate application given in Column (B)

Column (A)

- a) Bleaching powder
- b) Baking soda
- c) Washing soda
- d) Sodium chloride

- 1) a-ii; b-i; c-iv; d-iii
- 3) a-iii; b-iv; c-i; d-ii

Column (B)

- i) Preparation of glass
- ii) Production of H_2 and Cl_2
- iii) Decolourisation
- iv) Antacid
- 2) a-iii; b-ii; c-iv; d-i
- 4) a-ii; b-iv; c-i; d-iii

Ans: 3

47. Which of the following is an example of mineral acid?

- 1) $H_2C_2O_4$
- 2) CH_3COOH
- 3) $HCOOH$
- 4) H_2CO_3

Ans: 4

48. $Ca(OH)_2 + SO_2 \longrightarrow CaSO_3 + A$. What is A

- 1) O_2
- 2) H_2
- 3) SO_3
- 4) H_2O

Ans: 4

49. The raw material require for the manufacture of Na_2CO_3 by solvay process are

- A) $CaCl_2$, $(NH_4)_2CO_3$, NH_3
- 2) NH_4Cl , $NaCl$, $Ca(OH)_2$
- 3) $NaCl$, $(NH_4)_2CO_3$, NH_3
- 4) $NaCl$, NH_3 , $CaCO_3$, H_2O

Ans: 4

50. Which one of the following is not an allotrope of carbon?

- 1) Diamond
- 2) Benzene
- 3) Graphite
- 4) Fullerene

Ans: 2

SECTION-B (CHEMISTRY)

51. $3Fe + xH_2O \rightarrow Fe_3O_4 + 4H_2$. The value of x is

Ans: 4

52. $xHNO_3 + Ca(OH)_2 \rightarrow Ca(NO_3)_2 + yH_2O$. The sum of (x + y) is

Ans: 4

53. $H_2SO_4 + xKOH \rightarrow K_2SO_4 + H_2O$ the value of x in the balanced equation is

Ans: 2

54. The number of water molecules present per formula unit in ferrous sulphate crystal is.....
Ans: 7
55. Boiling point of water at sealevel is K
Ans: 373
56. How many electrons are there in the outermost shell of carbon?
Ans: 4
57. Number of atoms present in one formula unit of magnesium phosphate is
Ans: 13
58. A solution is prepared by dissolving 30g urea (NH_2CONH_2) in 315 g water (H_2O). The total number moles present in the solution is (Given atomic mass of C = 12u, O = 16u, N = 14u, H = 1u)
Ans: 18
59. How many of the following are solids at 37°C and 1 atm pressure?
 i) Lead (Pb) ii) Mercury (Hg) iii) Zinc (Zn) iv) Bromine (Br)
 v) Caesium (Cs) vi) Gallium (Ga) vii) Xenon (Xe) viii) Iodine (I)
 ix) Uranium (U) x) Phosphorus (P)
Ans: 5
60. How many grams of pure carbon can theoretically be obtained by dehydration of one mole cane sugar? (Sucrose, $\text{C}_{12}\text{H}_{22}\text{O}_{11}$). Given atomic mass of C = 12 u, H = 1u, O = 16u)
Ans: 144

SECTION -A (MATHEMATICS)

61. If $\sqrt{m} = 24$ then find the value of $2m + 1$
 1) 25 2) 1153 3) 12 4) 1150
Ans: 2
62. The present ages of Sreeraj and Rhaul are in the ratio 5 : 7. After four years the sum of their ages will be 56 years. Then their present ages are
 1) 18 and 30 2) 22 and 26 3) 20 and 28 4) 21 and 27
Ans: 3
63. If you subtract $\frac{1}{2}$ from a number and multiply the result by $\frac{1}{2}$, you get $\frac{1}{8}$. Then the number is
 1) $\frac{4}{3}$ 2) $\frac{1}{3}$ 3) $\frac{3}{4}$ 4) $\frac{1}{4}$
Ans: 3
64. Which of the following is a true statement?
 1) π and $\frac{22}{7}$ are both rationals 2) π and $\frac{22}{7}$ are both irrational
 3) π is rational and $\frac{22}{7}$ is irrational 4) π is irrational and $\frac{22}{7}$ is rational
Ans: 4

65. If $x = (2 + \sqrt{3})$, find the value of $x + \frac{1}{x}$

- 1) 5 2) 4 3) 2 4) 9

Ans: 2

66. $y - 4 = 0$ is the equation of a line

- 1) Parallel to x-axis and passing through (4, 0)
2) Parallel to x-axis and passing through (0, 4)
3) Parallel to y-axis and passing through (0, 4)
4) None of these

Ans: 2

67. The radii of the bases of a cylinder and a cone are in the ratio 4 : 3 and their heights are same then the ratio of their volume is

- 1) 16 : 9 2) 16 : 3 3) 4 : 9 4) 4 : 3

Ans: 2

68. If m is a real number such that $m^2 + 1 = 3m$, the value of $\frac{2m^5 - 5m^4 + 2m^3 - 8m^2}{m^2 + 1}$ is

- 1) 1 2) 2 3) -1 4) -2

Ans: 3

69. The perimeter of the triangle formed by the points (0, 0), (1, 0) and (0, 1) is

- 1) $\sqrt{2} - 1$ 2) $\sqrt{2} + 1$ 3) 3 4) $2 + \sqrt{2}$

Ans: 4

70. Five real numbers x_1, x_2, x_3, x_4, x_5 are such that

$$\sqrt{x_1 - 1} + 2\sqrt{x_2 - 4} + 3\sqrt{x_3 - 9} + 4\sqrt{x_4 - 16} + 5\sqrt{x_5 - 25} = \frac{x_1 + x_2 + x_3 + x_4 + x_5}{2}. \text{ Then } \sum_{i=1}^5 x_i \text{ is}$$

- 1) 25 2) 55 3) 110 4) 210

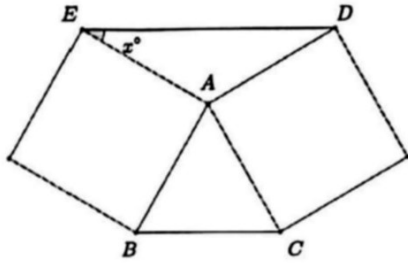
Ans: 3

71. Which of the following is not a polynomial?

- 1) $\sqrt{3}x^2 - 2\sqrt{3}x + 3$ 2) $\frac{3}{2}x^3 - 5x^2 - \frac{1}{\sqrt{2}}x - 1$
3) $x + \frac{1}{x}$ 4) $5x^2 - 3x + \sqrt{2}$

Ans: 3

72. ABC is an equilateral triangle. Squares are described on the sides AB and AC as shown. The value of x is



- 1) 20 2) 30 3) 45 4) 50

Ans: 2

73. What is the central angle of a semicircle?

- 1) 180° 2) 360°
3) 90° 4) 270°

Ans: 1

74. The co-ordinate of any point on y-axis are of the form

- 1) (x, 0) 2) (0, y)
3) (0, 0) 4) None of these

Ans: 2

75. The relationship between the zeroes α , β and coefficient of the quadratic polynomial $ax^2 + bx + c$ is

- 1) $\alpha + \beta = \frac{c}{a}$ 2) $\alpha + \beta = \frac{-b}{a}$ 3) $\alpha + \beta = \frac{-c}{a}$ 4) $\alpha + \beta = \frac{b}{a}$

Ans: 2

76. For any integer n, odd number can be represented as in the form

- 1) n 2) 2n 3) $2n + 1$ 4) $n + 1$

Ans: 3

77. $0.6 \times 0.6 \times 0.6 = ?$

- 1) 216 2) 0.216 3) 21.6 4) 2.16

Ans: 2

78. Which of the following is a pythagorian triplet?

- 1) 16, 18, 20 2) 1, 2, 3 3) 30, 40, 50 4) 50, 51, 52

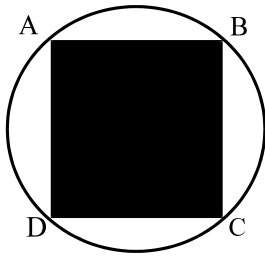
Ans: 3

79. First term of an A.P. is 5, the common difference is 7, then the 22nd term is

- 1) 132 2) 154 3) 160 4) 152

Ans: 4

80. In the figure $\square ABCD$ is a square, which is inscribed in the circle of area $16\pi\text{ cm}^2$. Then the area of square ABCD is



- 1) 16 cm^2 2) 32 cm^2 3) 48 cm^2 4) 64 cm^2

Ans: 2

SECTION-B (MATHEMATICS)

81. If $2x + 3y = 12$ and $x - y = 1$, then $x + y$ is

Ans: 5

82. The sum of two natural numbers is 240 and their ratio is 3 : 5. Then the largest number is

Ans: 7

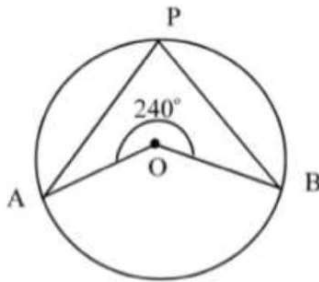
83. The mode of the distribution 3, 5, 7, 4, 2, 1, 4, 3, 4 is

Ans: 4

84. Find the distance between -5 and 8 on the number line?

Ans: 13

85. In the given figure, the reflex $\angle AOB$ is 240° . Then the angle $\angle APB$ is



Ans: 60

86. Value of $\sin^2 45^\circ + \tan^2 45^\circ + \cos^2 45^\circ + \sec^2 45^\circ$ is

Ans: 4

87. Smallest two digit prime number is

Ans: 11

88. The radius of the circle is 5cm and the distance of a chord from its centre is 4cm. Then the length of the chord is

Ans: 6

89. The degree measures of three angles of a triangle are x , y and z . If $z = \frac{x+y}{2}$, then the value of z is

Ans: 60

90. Largest 3 digit even perfect square number is

Ans: 900