vedanta

BLE MODEL QUESTION SET

Optional Mathematics

Time: 1 hour 30 minutes | Maximum Marks: 50

Candidates are required to answer in their own words as far as practicable. Credit shall be given to originality in expression, creativity and neatness in hand, not to rote learning.

Attempt all the questions.

Group-A (9 × 2 = 18)

1. (a) If the ordered pairs (x + 1, 3y) and (6, 9) are equal, find the values of x and y.

(b) If p (x) = x – 1 and q (x) = $x^2 + x + 1$, find p (x).q(x)

2. (a) Arrange the surds $\sqrt{2}, \sqrt[3]{4}$ and $\sqrt[4]{7}$ in ascending order of magnitude.

(b) If $A=\begin{pmatrix} 2 & 3 \\ 1 & 4 \end{pmatrix}$, find $2A - A^T$.

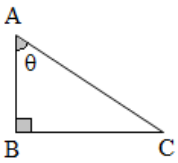
3. (a) Find the coordinates of mid-point of the line joining the points A (-2, 1) and B (4, 7).

(b) Define unit vector. Find the magnitude of $\vec{a} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$.

4. (a) State four fundamental geometrical transformations. Find the image of the point P (2, -3) under rotation through positive quarter-turn about origin.

(b) Convert 72^0 into grades and radian.

(c) In the given figure, find the value of sinθ and secθ in terms of the sides of the triangle.



Group-B (8 × 4 = 32)

5. If A = {1, 2} and B = {3, 4} are given sets. Find A×B and express it in arrow diagram.

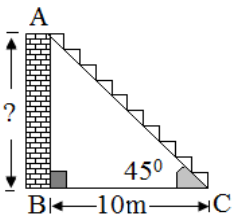
6. If $A + B = \begin{pmatrix} 10 & 8 \\ 9 & 13 \end{pmatrix}$ and $A - B = \begin{pmatrix} 8 & 4 \\ 3 & 5 \end{pmatrix}$, find the matrices A and B.

7. Simplify: $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} + \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$

8. Show that the points A (1, 4), B (-2, 2) and C (3, 1) are the vertices of an isosceles triangle ABC.

9. Prove that: $\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} = \text{cosec}\theta - \cot\theta$

10. From the given figure, find the height of the wall.



11. Find the average age of the people from the data given below.

Age (in years)	0-10	10-20	20-30	30-40	40-50
No. of people	12	16	6	7	9

12. The vertices of ΔABC are A (2, 4), B (4, 1) and C (5, -1). Find the image ofΔABC after reflection on y –axis and plot ΔABC and its image on the same graph paper.

The End