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3976/M

M-24/2051

BASIC MATHEMATICS

Paper–BCA-125

Semester–II

Time allowed : 3 Hours] [Maximum Marks : 75

Note : The candidates are required to attempt two questions each from section A and section B carrying 15 marks each and the entire section C consisting of 5 question carrying 3 marks each.

SECTION-A

1. (a) Reduce $1 - cosx + isinx$ to the modulus amplitude form.

   (b) Find the locus of z given by $|z-1| = |2z-3|$.

2. (a) Solve: $x^2 + 3x + 9 = 0$.

   (b) Solve : $\bar{2}x^2 + x + \bar{2} = 0$.

3. (a) Find the equation of the line passing through the point (2, 3) and with slope 4.

   (b) Find the equation of the line which intersects the x-axis at the distance of 3 units to the left of origin with slope –2.

4. (a) Find the equation of the circle with centre (3, 0) and radius 4.

   (b) Find the centre and the radius of the circle $x^2 + y^2 - 4x - 8y - 45 = 0$.

SECTION-B

5. Define symmetric and skew symmetric matrix. Express the matrix

$$\begin{bmatrix} 3 & -2 & 6 \\ 2 & 7 & -1 \\ 5 & 4 & 0 \end{bmatrix}$$

as a sum of skew-symmetric and symmetric matrix.

6. Define Minors and co-factors of the matrix and Find the adjoint of the matrix :

$$\begin{bmatrix} 4 & 2 & -3 \\ 1 & 3 & -6 \\ -5 & 0 & -7 \end{bmatrix}$$

7. Solve : $x + 4y + 3z = 2$, $2x - 6y + 6z = -3$, $5x - 2y + 3z = -5$ with the help of determinant method.

8. Solve by matrix inverse method :

$x - y + z = 1, 2x - y = 1, 3x + 3y - 4z = 2.$

SECTION-C

9. Attempt all questions :

(i) Express the given Complex number :

$(7i)(4 + i)$ *in* $a + ib$ form.

(ii) Find Slope of the line :

$3x - 5y + 6 = 0.$

(iii) Find the diameter form of circle.

(iv) Define Inverse of the matrix.

(v) Define Section Formula and derive it.