

# BITT POLYTECHNIC

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## MATHEMATICS

SEMESTER – 1, BRANCH – ME

ASSIGNMENT NO – 2

(25 QUESTIONS)

### VERY SHORT ANSWERS:

1. DEFINE MATRIX?
2. DEFINE ROW MATRIX?
3. DEFINE COLUMN MATRIX?
4. DEFINE NULL OR ZERO MATRIX?
5. DEFINE SQUARE MATRIX?
6. DEFINE DIAGONAL MATRIX?
7. DEFINE UNIT MATRIX?

8. SOLVE: 
$$\begin{vmatrix} 2 & 5 \\ 4 & 3 \end{vmatrix}$$

9. SOLVE:

$$\begin{vmatrix} 3 & 2 & 8 \\ 5 & 1 & 2 \\ 1 & 0 & 3 \end{vmatrix}$$

10. FIND A+B; IF  $A = \begin{pmatrix} -1 & 2 \\ 3 & 4 \end{pmatrix}$        $B = \begin{pmatrix} 3 & -2 \\ 1 & 5 \end{pmatrix}$

### SHORT ANSWERS:

1. FIND AREA OF TRIANGLE ABC, IF A (3,8), B (-4,2) & C (5,-1).
2. FIND AREA OF TRIANGLE PQR, IF P (1,1), Q (-6,-7) & R (-5,-4).
3. SHOW THAT THE FOLLOWING POINTS ARE COLLINEAR: A (2,3), B (-1,-2) & C (5,8).
4. SHOW THAT THE FOLLOWING POINTS ARE COLLINEAR: M (-2,5), N (-6,-7) & O (-5,-4).
5. FIND THE VALUE OF "K" FOR WHICH THE POINTS A (3,-2), B (K,2) & C (8,8) ARE COLLINEAR.
6. IF POINTS A (a,0), B (0,b) & C (1,1) ARE COLLINEAR, PROVE THAT:  $1/a + 1/b = 1$ .

7. SOLVE: 
$$\begin{vmatrix} \sqrt{3} & \sqrt{5} \\ -\sqrt{5} & 3\sqrt{3} \end{vmatrix}$$

8. SOLVE: 
$$\begin{vmatrix} 6 & -3 & 2 \\ 2 & -1 & 2 \\ -10 & 5 & 2 \end{vmatrix}$$

9. PROVE THAT: 
$$\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ bc & ca & ab \end{vmatrix} = (a-b)(b-c)(c-a)$$

10. PROVE THAT: 
$$\begin{vmatrix} x & y & x+y \\ y & x+y & x \\ x+y & x & y \end{vmatrix} = -2(x^3+y^3)$$

**LONG ANSWERS:**

1. IF  $A = \begin{pmatrix} -1 & -1 \\ 2 & -2 \end{pmatrix}$ , SHOW THAT  $A^2 + 3A + 4I = 0$  & HENCE FIND  $A^{-1}$ .

2. FIND THE INVERSE OF THE MATRIX  $A = \begin{pmatrix} 3 & -10 & -1 \\ -2 & 8 & 2 \\ 2 & -4 & -2 \end{pmatrix}$

3. BY USING MATRIX METHOD, SOLVE THE SYSTEM OF EQUATION:

$$\begin{aligned} 2x + 5y &= 7 \\ 6x + 15y &= 13 \end{aligned}$$

4. USING MATRICES, SOLVE THE FOLLOWING SYSTEM OF LINEAR EQUATION:

$$\begin{aligned} 3x + 4y + 2z &= 8 \\ 2y - 3z &= 3 \\ x - 2y + 6z &= -2 \end{aligned}$$

5. IF  $A = \begin{pmatrix} 2 & 1 & 1 \\ 1 & -2 & -1 \\ 0 & 3 & -5 \end{pmatrix}$ , FIND  $A^{-1}$ .

← THE END →