HOME ASSIGNMENT

Economics (Honours)

ECO-HC-2026: Mathematical Methods in Economics – II

Full Marks: 30 **Last date of Submission: 2nd April, 2023**

---

1. **What do you mean by Matrix? Explain about types of matrices with example.**

   Or, **8**

   What is determinant? Write its properties.

2. **If** $A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 1 & 2 & 3 \end{bmatrix}$ **and** $B = \begin{bmatrix} 1 & 0 \\ 2 & 1 \\ 3 & 2 \\ 4 & 3 \end{bmatrix}$**, find AB and BA.** **3**

3. **Examine whether the matrix** $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ **satisfies the matrix equation** $A^2 - 5A + 7I = 0$**, where I and O denote the identity matrix and null matrix of order (2X2) respectively.** **3**

4. **Define singular and non-singular matrix. Find the inverse of the following matrices:**

   (a) $A = \begin{bmatrix} 5 & 0 & 3 \\ 6 & 2 & 1 \\ 1 & 4 & 3 \end{bmatrix}$ **7**

   (b) $A = \begin{bmatrix} 4 & 5 & 8 \\ 2 & 0 & 4 \\ 3 & 1 & 6 \end{bmatrix}$

5. **Solve the following equation system by Matrix Inversion Method:** **5**

   $4x + 3y - 2z = 7$

   $x + y = 5$

   $3x + z = 4$

6. **Solve the following equation system by Cramer's Rule:** **4**

   $5x + 3y + z = 16$

   $2x + y + 3z = 11$

   $x + 2y + 9z = 25$