

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T-1, EXAMINATION- 2023

B. Tech. I Semester (BI/BT)

COURSE CODE (CREDITS): 18B11MA112 (04)

MAX. MARKS: 15

COURSE NAME: BASIC MATHEMATICS-I

COURSE INSTRUCTORS: MDS

MAX. TIME: 1 Hrs.

*Note: All questions are compulsory. Marks are indicated against each question in square brackets. Use of scientific calculator is not allowed.*

**Quest.(1)** Write minors and cofactor of the elements of the matrix [3] [CO-1]

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

**Quest.(2)** If

$$[x \ 4 \ 1] \begin{bmatrix} 2 & 1 & 2 \\ 0 & 1 & 2 \\ 0 & 2 & -4 \end{bmatrix} \begin{bmatrix} x \\ 4 \\ -1 \end{bmatrix} = 0$$

where  $O$  is the null matrix of order  $1 \times 1$ , then find  $x$ . [3] [CO-1]

**Quest.(3)** If  $A = \begin{bmatrix} -3 \\ 1 \\ 2 \end{bmatrix}$  and  $B = [2 \ 1 \ 0]$ , then verify that  $(AB)^T = B^T A^T$  [3] [CO-1]

**Quest.(3)** Prove that [3] [CO-1]

$$\begin{vmatrix} x+4 & x & x \\ x & x+4 & x \\ x & x & x+4 \end{vmatrix} = 16(3x+4)$$

**Quest.(5)** Solve the following system of linear equation [3] [CO-1]

$$\begin{aligned} x - y + 4z &= 3 \\ x - 4y + 3z &= -5 \\ x + 3y - 2z &= 6 \end{aligned}$$