JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2023

B.Sc. (HONS.) MATHEMATICS & COMPUTING: I-Semester

COURSE CODE(CREDITS): 22BS1MA112 (4) MAX. MARKS: 15

COURSE NAME: Linear Algebra

COURSE INSTRUCTORS: BKP*, MDS, RKB MAX. TIME: 1 Hour

Note: (a)All questions are compulsory.

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for

solving problems

1. Find the inverse of the matrix by using Gauss Jordon Method $\begin{bmatrix} 2 & 0 & -1 \\ 5 & 1 & 0 \\ 0 & 1 & 3 \end{bmatrix}$.

   [CO-1] [4 Marks]

2. Solve the following system of equations by using Gauss elimination method:

   $$x + 2y - 3z = 1, \qquad 2x + 5y - 8 = 4, \qquad 3x + 8y - 13z = 7.$$

   [CO-1] [4 Marks]

3. Find the eigenvalues and the corresponding eigenvectors of the matrix $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 2 & 0 & 3 \end{bmatrix}$.

   [CO-2] [4 Marks]

4. Test whether $(G, \times_5)$, where $G = \{0, 1, 2, 3, 4\}$ and $\times_5$ is multiplication modulo 5, forms a group or not?

   [CO-3] [3 Marks]