

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2023

M.Sc-I Semester (BT/MB)

COURSE CODE(CREDITS):20MS1MA111(2)

MAX. MARKS: 15

COURSE NAME:Basics of Mathematics and Statistics

COURSE INSTRUCTOR: Dr.Neel Kanth

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*

Q1.For the matrices  $A = \begin{bmatrix} 2 & -1 \\ 3 & 0 \\ -1 & 4 \end{bmatrix}$  and  $B = \begin{bmatrix} -2 & 3 \\ 0 & 4 \end{bmatrix}$  compute  $AB$  and  $BA$  whichever exists.

[3]

Q2.Solve for  $x$  and  $y$ , given that  $\begin{bmatrix} x & y \\ 3y & x \end{bmatrix} \begin{bmatrix} 1 \\ 2 \end{bmatrix} = \begin{bmatrix} 3 \\ 5 \end{bmatrix}$

[4]

Q3.Find matrices  $A$  and  $B$ , if

$$A + B = \begin{bmatrix} 1 & 0 & 2 \\ 5 & 4 & -6 \\ 7 & 3 & 8 \end{bmatrix} \text{ and } A - B = \begin{bmatrix} -5 & -4 & 8 \\ 11 & 2 & 0 \\ -1 & 7 & 4 \end{bmatrix}$$

[4]

Q4.Construct a  $2 \times 3$  matrix whose elements are given by  $a_{ij} = \frac{(i-2j)^2}{2}$

[2]

Q5.Find the value of the determinant  $\begin{vmatrix} 1 & 2 & 0 \\ 2 & 3 & 0 \\ 3 & 4 & 0 \end{vmatrix}$

[2]