JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATIONS-2022

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: All questions are compulsory. Each question is of 3 marks.

Q1.Construct a 2×3 matrix $A = \begin{bmatrix} a_{ij} \end{bmatrix}$ whose elements are given by $a_{ij} = \frac{i-j}{i+j}$

Q2.Find x, y and z, so that $A = B$ where $A = \begin{bmatrix} x-2 & 3 & 2z \\ 18z & y+2 & 6z \end{bmatrix}$ and $B = \begin{bmatrix} y & z & 6 \\ 6y & x & 2y \end{bmatrix}$

Q3.Find the value of x such that $\begin{bmatrix} 1 & x & 1 \end{bmatrix} \begin{bmatrix} 1 & 3 & 2 \\ 2 & 5 & 1 \\ 15 & 3 & 2 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \\ x \end{bmatrix} = 0$

Q4.Show that the value of determinant $\begin{vmatrix} x & \sin\theta & \cos\theta \\ -\sin\theta & -x & 1 \\ \cos\theta & 1 & x \end{vmatrix}$ is equal to $-x^3$

Q5.Show that the following system of equations is inconsistent using Cramer's rule.

$2x + y = 3$ and $4x + 2y = 5$