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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1, EXAMINATION- September-2018

B.Tech. II Semester (BI/BT)

COURSE CODE: 10B11MA112 MAX. MARKS: 15

COURSE NAME: BASIC MATHEMATICS-I

COURSE CREDITS: 04 MAX. TIME: 1:00 Hrs.

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Quest (1) Find the Inverse of $A = \begin{bmatrix} 2 & 4 & 3 \\ 0 & 1 & 1 \\ 2 & 2 & -1 \end{bmatrix}$ and verify that $AA^{-1} = I_3$. [4] [CO-1]

Quest (2) Prove that [3] [CO-1]

$$\begin{vmatrix} a & b & c \\ a^2 & b^2 & c^2 \\ b+c & a+c & a+b \end{vmatrix} = (a-b)(b-c)(c-a)(a+b+c)$$

Quest (3) Solve the system of linear equation by Cramer's rule [4] [CO-1]

$$x - y + 3z = 3$$
$$2x + 3y + z = 2$$
$$3x + 2y + 4z = 5$$

Quest (4) Find the unit vector in the direction of vector $\overrightarrow{AB}$, where A and B are the points $(4, 9, 3)$ and $(5, 2, 7)$ respectively. [2] [CO-2]

Quest (5) Show that matrix $A = \begin{bmatrix} -5 & -8 & 0 \\ 3 & 5 & 0 \\ 1 & 2 & -1 \end{bmatrix}$ is an Involutory matrix. [2] [CO-1]