

No. of Printed Pages : 2 **MMT-008(P)(Set-II)**

**M. SC. (MATHEMATICS WITH
APPLICATIONS IN COMPUTER
SCIENCE) [M. SC. (MACS)]**

Term-End Practical Examination

December, 2024

**MMT-008(P)(Set-II) : PROBABILITY AND
STATISTICS PRACTICAL**

Time : $1\frac{1}{2}$ Hours

Maximum Marks : 40

Note : (i) *There are two questions in this paper
worth 30 marks.*

(ii) *Answer both the questions.*

(iii) *The remaining 10 marks are for viva-
voce.*

1. Let $X \sim N_4(\mu, \Sigma)$, where : 15

$$\mu = \begin{bmatrix} 2 \\ 1 \\ 3 \\ -4 \end{bmatrix} \text{ and } \Sigma = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 2 & -2 & -1 \\ 1 & -2 & 9 & -1 \\ 1 & -1 & -1 & 16 \end{bmatrix}$$

[2]

Write a program in C language to find :

(i) Marginal distribution of $\begin{bmatrix} X_1 \\ X_3 \end{bmatrix}$

(ii) Conditional distribution of $\begin{bmatrix} X_1 \\ X_3 \end{bmatrix}$ given

$$\begin{bmatrix} X_3 \\ X_4 \end{bmatrix} = \begin{bmatrix} 5 \\ 8.2 \end{bmatrix}.$$

2. Write a program in C language to find the triangular square root to the matrix : 15

$$\begin{bmatrix} 4 & 2 & 6 \\ 2 & 17 & 27 \\ 6 & 27 & 70 \end{bmatrix}$$

Also, find the inverse of the matrix.

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