MMT-008 (P) (Set-1)

M.Sc. IN MATHEMATICS WITH APPLICATIONS IN COMPUTER SCIENCE

(M.Sc. MACS)

Probability and Statistics (Practical)

Duration : 1½ hours Maximum Marks : 40

Note: 1. There are two questions in this paper worth 30 marks.

2. Both the questions are compulsory.

3. Remaining 10 marks are for viva-voce.

4. All the symbols used have their usual meaning.

1. Consider the mean vectors $\mu_x = \begin{bmatrix} 3 \\ -2 \end{bmatrix}$ and $\mu_y = 4$ and the covariance matrix of x_1, x_2 and y are $\sum_{xx} = \begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix}$, $\sigma_{yy} = 9$ and $\sigma_{xy} = \begin{bmatrix} 3 \\ 1 \end{bmatrix}$. Write a program in 'C' language to fit the equation $y = b_0 + b_1 x_1 + b_2 x_2$ as best linear equation.

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2. Write a program in ‘C’ language to find the correlation matrix of the given covariance matrix. You may assume $X \sim N_4(\mu, \sum)$. Also, test your program for

$$\sum = \begin{bmatrix} 1 & 4 & -2 & 1 \\ 4 & 4 & 3 & 2 \\ -2 & 3 & 9 & 1 \\ 1 & 2 & 1 & 16 \end{bmatrix}.$$ 15

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