MMT-008 (P) (Set-2)

M.Sc. IN MATHEMATICS WITH APPLICATIONS IN COMPUTER SCIENCE

(M.Sc. MACS)

Probability and Statics (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.   Let $X \sim N_p (\mu, \Sigma)$. Write a program in C language to obtain the distribution

of $Y = C X$, where $C = \begin{bmatrix} a_1 & a_2...a_p \\ b_1 & b_2...b_p \end{bmatrix}$.

Use the programme to find the distribution Y for $C = \begin{bmatrix} 2 & 1 & 2 \\ 1 & -1 & 1 \end{bmatrix}, \mu = \begin{bmatrix} 4 \\ -2 \\ 6 \end{bmatrix}$

and $\Sigma = \begin{bmatrix} 6 & 1 & 2 \\ 1 & 8 & 4 \\ 2 & 4 & 9 \end{bmatrix}$.   15

2.   Write a program in 'C' language to fit the model $y = b_0 + b_1 x_1 + b_2 x_2$. You may assume that there are n observations, where $n \leq 25$.

Use the program to fit the linear model for the data given below:

y_i	50	48	51	46	47	90	95	62	87	73
x_{1i}	3	3	2	2	5	4	2	3	1	5
x_{2i}	10	11	8	7	6	5	7	8	9	10

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