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MMT-008(P)

M.Sc. (MATHEMATICS WITH APPLICATIONS IN COMPUTER SCIENCE)
M.Sc. (MACS)

Term-End Practical Examination

00105

June, 2018

MMT-008(P) : PROBABILITY AND STATISTICS

Time : $1\frac{1}{2}$ Hours *Maximum Marks : 40*

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

(ii) Remaining 10 marks are for viva-voce.

(iii) All the symbols used have their usual meaning.

1. Write a program in C language to fit the model $y_i = b_0 + b_1x_{1i} + b_2x_{2i}$, $1 \le i \le n$. You may assume that $n \le 20$. Use the program to fit a linear model for the data given below :

y_i	12	22	32	40	42	27	18	20
x_{1i}	10	5	7	7	19	22	11	7
x_{2i}	3	4	4	7	7	8	8	9

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2. Consider $\mathbf{Y} \sim N_5(\mu, \Sigma)$, where

$$\mu = \begin{bmatrix} 1 \\ 2 \\ -2 \\ 4 \\ -3 \end{bmatrix} \quad \text{and} \quad \Sigma = \begin{bmatrix} 5 & 0 & 4 & 2 & 9 \\ 0 & 3 & 2 & 7 & 8 \\ 4 & 2 & 1 & 3 & 5 \\ 2 & 7 & 3 & 2 & 4 \\ 9 & 8 & 5 & 4 & 9 \end{bmatrix}$$

Write a program in 'C' language to obtain the conditional distribution of $\begin{bmatrix} y_1 \\ y_2 \\ y_5 \end{bmatrix}$, given $\begin{bmatrix} y_3 \\ y_4 \end{bmatrix} = \begin{bmatrix} 1 \\ -2 \end{bmatrix}$. *15*