No. of Printed Pages : 1

MMT-008(P)

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

M.Sc. (MACS)

00353

Term-End Practical Examination

December, 2015

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 the viva-voce.

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

1. Consider $Y = [y_1 \quad y_2 \quad y_3]'$ having $N_3(\mu, \Sigma)$, where

$$\mu = \begin{bmatrix} 2 \\ 4 \\ 1 \end{bmatrix} \text{ and } \Sigma = \begin{bmatrix} 9 & 0 & 2 \\ 0 & 4 & 0 \\ 2 & 0 & 6 \end{bmatrix}.$$

Write a program in 'C' language to find the marginal distribution of y_1, y_2 and y_3. Also, extend this program to find the conditional distribution of y_1, given y_2 and y_3. *20*

2. Write a program in 'C' language that checks whether a quadratic form in three variables is positive definite or not. It should do the following : *10*

(i) Read the coefficients of the quadratic form.

(ii) Print the matrix corresponding to the quadratic form.

(iii) Check whether the quadratic form is positive definite or not and print the result.