No. of Printed Pages : 2 **MMTE–005(Set-II)**

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

Term-End Practical Examination

June, 2025

MMTE-005(Set-II) : CODING THEORY

Time : 1½ Hours *Maximum Marks : 40*

Note : *(i) The question paper has two questions worth 30 marks. Attempt both of them.*

(ii) The remaining 10 marks are for the viva.

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1. Write a C program to find the CRC with the CRC polynomial $x^7 + x^6 + x^4 + 1$. Compute the CRC for the following message using the program above : 15

   10001100001110101110110110010001

2. Write a 'C' program that takes the generator matrix of a linear code over F_3 and gives all the possible codewords of the code as well as the minimum distance of the code as output. Use it to find the codewords and the minimum distance of linear code over F_3 with generator matrix : 15

$$G = \begin{bmatrix} 1 & 2 & 0 & 1 & 0 & 2 & 1 & 0 \\ 0 & 1 & 0 & 0 & 2 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 & 1 & 1 & 0 & 1 \end{bmatrix}$$

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