No. of Printed Pages : 2 **MMTE-007(P)(Set-I)**

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

Term-End Practical Examination

December, 2024

MMTE-007(P)(Set-I) : SOFT COMPUTING AND ITS APPLICATIONS (PRACTICAL)

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

Note : *(i) There are two questions in this paper, totalling 30 marks.*

(ii) Answer both of them.

(iii) The remaining 10 marks are for viva-voce.

1. Write a program in 'C' language to implement the FCM algorithm. Also, test it to find the final fuzzy partition and cluster centers for the following data : 15

	f_1	f_2
x_1	3	2
x_2	5	4

x_3	7	4
x_4	9	6
x_5	11	8
x_6	13	9
x_7	15	10
x_8	17	11
x_9	19	6
x_{10}	21	5

The initial cluster centers are :

$$V_1 = (10, 10),\ V_2 = (20, 20)$$

with C = M = 5.

2. Write a program in 'C' language to maximize $f(x) = (x)^{1/3}$, subject to $1 \le x \le 1296$ by considering the string length 10 using genetic algorithm. 15

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