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MMTE-007(P)

**M. Sc. (Mathematics with  
Applications in Computer  
Science) M. Sc. (MACS)  
Term-End Examination  
December, 2018**

**SOFT COMPUTING AND ITS  
APPLICATIONS (PRACTICAL)**

*Time :  $1\frac{1}{2}$  Hours*

*Maximum Marks : 40*

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- Note :** (i) This question paper has *two* questions worth 30 marks.  
(ii) Remaining 10 marks are for viva-voce.
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1. Write a program in 'C' language to write the children solution of a Travelling Salesman problem consisting of n cities using cyclic crossover in genetic algorithm. Also, test your program to find the children solution of the following two parents :

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Parent 1	Parent 2
A	C
B	A
C	D
D	B
E	G
F	E
G	H
H	F
I	J
J	I

2. Implement the Fuzzy C-means (FCM) algorithm using 'C' language.

Also, test the program to find the cluster centers for the following two-dimensional data sets :

$k$	$x_{k_1}$	$x_{k_2}$
1	0.9	0
2	1.1	0
3	1.9	0
4	0.8	0
5	0.6	0
6	0	0.1
7	0	1.7
8	0	1.8
9	0	1
10	0	0.2

Assume that convergence is achieved when the difference between the two values is less than or equal to 0.05. Starting with different initial membership matrices check whether the final membership functions are always same ?

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