MMT-001(P) (Set-1)

M.Sc. (Mathematics with Applications in Computer Science) (MSCMACS)

Programming and Data Structures

Duration: 2 hours   Maximum Marks: 50

Note: 1. There are two questions in this paper. Answer both of them. They carry 40 marks.

2. Rest 10 marks are for viva-voce.

1. Write a function that finds the transpose of a square matrix. Use the function and the relation $A = \frac{1}{2}(A - A^T) + \frac{1}{2}(A + A^T)$, where A^T is the transpose of A, to write a C program that does the following:

   (i) Takes a square matrix A as input.

   (ii) Prints two matrices B and C such that A=B + C, where B is a symmetric matrix and C is a skew symmetric matrix   15

2. Write a C program that implements a list of strings, performing the following tasks:

   (i) Add the strings "red", "blue", "orange", "black" and "green" in the list in the given order.

   (ii) Insert "purple" at the fourth position.

   (iii) Remove "orange" from the list.

   (iv) Print all the elements of the list   25

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