No. of Printed Pages : 2

MMTE–001(Set-II)

M. SC. (MATHEMATICS WITH APPLICATIONS IN COMPUTER SCIENCE) (MSCMACS)

Term-End Practical Examination

June, 2026

MMTE-001(Set-II) : GRAPH THEORY

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

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

(*ii*) *Remaining 10 marks are for viva-voce.*

(*iii*) *All the programs are to be written in C language.*

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1. Write a program that constructs the adjacency matrix A of an undirected unweighted graph, given a sequence of edges as input. The program then performs the following operations : 15

   (i) Print the degree sequence of the graph.

   (ii) Print the neighbours of a given vertex.

   (iii) Compute A^k for any positive integer k given by the user.

   (iv) Print the number of walks of length k between any two vertices given by the user.

2. Using Dijkstra's algorithm write a program to find the distances from a root vertex to all the vertices in a connected weighted graph. 15

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