

**M.Sc. (MATHEMATICS WITH APPLICATIONS
IN COMPUTER SCIENCE)**

Term-End Examination

August, 2011

00409

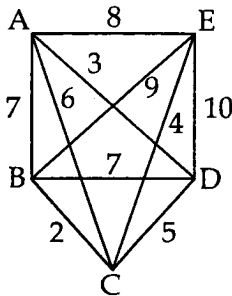
MMTE-001 (P) : GRAPH THEORY

Time : 1½ hours

Maximum Marks : 40

Note : There are two questions in this paper totalling 30 marks. Remaining 10 marks are for the viva-voce. All the programs are to be written in C - language.

1. (a) Write a program that uses Kruskal's algorithm to find a minimum spanning tree for a weighted connected graph. 20
- (b) Use the program to find a minimum spanning tree for the connected graph given below :



2. (a) Write a program that accepts the incidence matrix of an undirected graph as its input and outputs the degrees of all the vertices and the number of edges. 20
- (b) Use this program to find the degrees of all the vertices of the graph with the following incidence matrix :

	e_1	e_2	e_3	e_4	e_5	e_6
v_1	1	0	0	0	1	0
v_2	1	1	0	0	0	0
v_3	0	1	1	0	0	1
v_4	0	0	1	1	0	0
v_5	0	0	0	1	1	1
