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MMTE-001(P)

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

Term-End Practical Examination

00141

December, 2016

MMTE-001(P) : GRAPH THEORY

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

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

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

(iii) 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.

(b) Use the program to find a minimum spanning tree for the connected graph given in Figure 1.

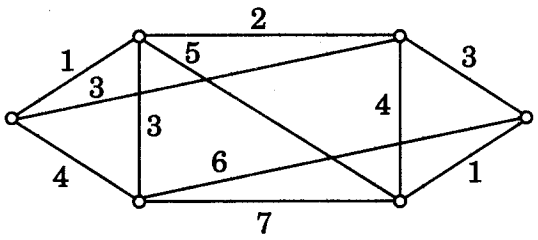

Figure 1 *20*

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.

(b) Use the 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	e_7
v_1	1	0	0	0	1	1	0
v_2	1	1	0	0	0	0	1
v_3	0	1	1	0	0	1	0
v_4	0	0	1	1	0	0	0
v_5	0	0	0	1	1	0	1

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