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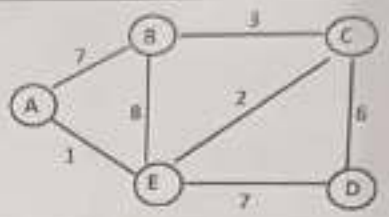
School of Engineering
Second Theory Sessional Examination
Odd Semester (AS: 2024-25)

B. Tech: CSE& CSE-AI Year: 2nd Semester: 3rd

Course Title: Data Structure Using 'C' Max Marks: 30
Course Code: NCS4302 Time: 1hr

Instructions if any: Read the question Carefully.

SECTION 'A' Q.N.1. Attempt all parts of the following:		Course Objective	Marks
a)	Explain Threaded Binary Tree.	CO3	1
b)	How many spanning trees are possible for 5 nodes?	CO4	1
c)	What is Complete Binary Tree?	CO3	1
d)	What is the Hash Function?	CO4	1
e)	Explain Array representation of Graph.	CO4	1

SECTION 'B' Q.N.2. Attempt any two parts of the following:		Course Objective	Marks
a)	Explain **BFS** algorithm? Find the **DFS** sequence of given graph. if source is **0**. 	CO4	7.5
b)	What is a B-tree? Construct a B-Tree Of **order4** for given sequence: **34, 23, 67, 45, 12, 54, 87, 43, 98, 75**	CO3	7.5
c)	Explain Dijkstra'' algorithm & Find the shortest path of given graph using Dijkstra'' algorithm. 	CO4	7.5

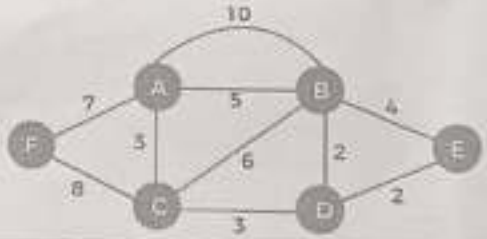
SECTION 'C' Q.N.3. Attempt any one part of the following:		Course Objective	Marks
a)	What is an AVL tree? Explain types of AVL rotation & Construct an AVL tree by inserting following elements: **2, 1, 4, 5, 9, 3, 6, 7** .	CO3	10
b)	Differentiate between Quick Sort & Merge Sort algorithm. Sort the given values using Merge sort **15, 10, 5, 20, 25, 30, 40, 7.**	CO4	10
c)	What is the difference between Prim's & Kruskal's algorithm? Explain Kruskal's algorithm & find the MST of the given graph. 	CO3	10

Table 1: Mapping between COs and questions
(Number of COs may vary from course to course)

COs	Questions Numbers	Total Marks
CO3	1(a),1(c),2(b), 3(a), 3(c)	29.5
CO4	1(b), 1(d),1(e), 2(a), 2(c), 3(b)	28