DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Winter Examination – 2022

Course: B. Tech. **Branch :Computer Engineering** **Semester :III**

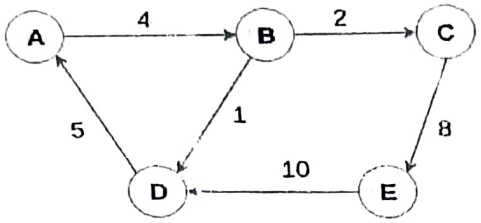
Subject Code & Name: BTCOC303 Data Structures

Max Marks: 60 **Date:** **Duration: 3 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Write proper Syntax, example and program wherever necessary.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		12
A)	What is a data structure? Why do we need data structures? Differentiate linear and non-linear data structure.	**Remember**	6
B)	Explain the concept of sparse matrices.	**Understanding**	6
C)	Explain double hashing in data structure with its advantages and disadvantages.	**Understanding**	6
Q.2	**Solve Any Two of the following.**		12
A)	What is Queue ADT? Explain representation and implementation of queue using sequential operations.	**Synthesis**	6
B)	Explain applications of stack for Expression Evaluation.	**Understanding**	6
C)	What is priority queue ? Explain operations of priority queue.	**Analysis**	6
Q. 3	**Solve Any Two of the following.**		12
A)	Explain circular linked list data structure with its insertion and deletion operations.	**Analysis**	6
B)	Write a C Program to implement following any two operations of doubly linked list. 1.insertion 2.deletion 3.display 4.search	**Apply**	6
C)	Justify a linked list is a data structure that is based on dynamic memory allocation. and List the application of Linked List Dynamic Memory Allocation.	**Understanding**	6
Q.4	**Solve Any Two of the following.**		12
A)	What is Binary Search Tree? Write an algorithm to search an element in Binary search tree.	**Remember**	6

B)	Explain Adjacency matrix for an undirected graph and what will be the adjacency matrix for the below directed weighted graph?  Fig. Directed weighted graph	**Synthesis**
C)	Explain Threaded Binary Tree and its types? State its advantages and disadvantages.	**Understanding**
Q. 5	**Solve Any Two of the following.**	
A)	What is a skip list? Write algorithm for basic skip list operations.	**Remember**
B)	Explain binary search algorithm by suitable example. Discuss the complexity of Binary search algorithm.	**Analysis**
C)	Explain Insertion sort algorithm with suitable example. Discuss the complexity of insertion sort.	**Understanding**
	***** End *****	

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