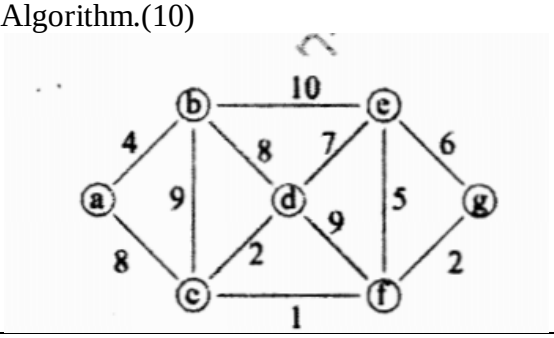
Roll No.										

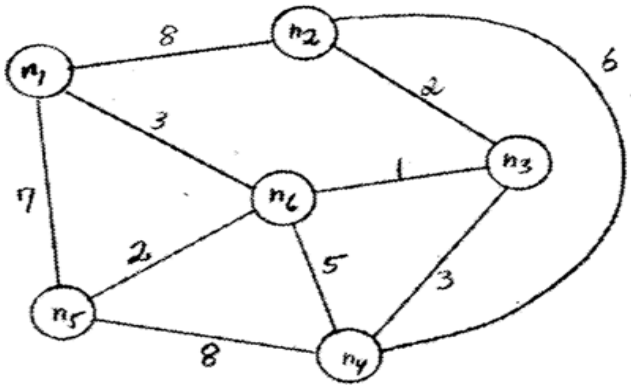
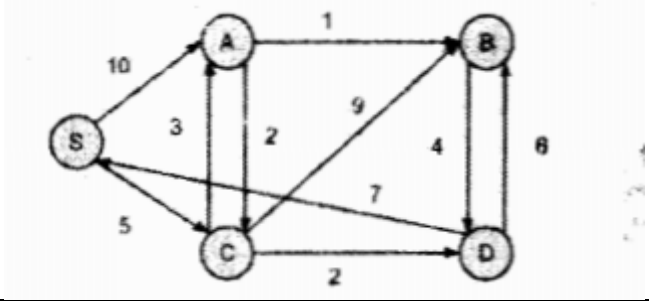
JSS MAHAVIDYAPEETHA
JSS ACADEMY OF TECHNICAL EDUCATION, NOIDA
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CIA-III
AY 2020-21 (Odd Semester)

Course	**:**	**B. Tech**	**Date**	**:**	**25/02/2021**
Semester	**:**	**III**	**Subject Code**	**:**	**KCS-101**
Subject	**:**	**Data Structures Using C**	**Max. Marks**	**:**	**60**
Time	**:**	**9.30 -12.00**			

COURSE OUTCOMES	
C203.1	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications.
C203.2	Discuss the computational efficiency of the sorting and searching algorithms.
C203.3	Implementation of Abstract Data Types (ADT) and perform various operations on these data structure.
C203.4	Understanding the concept of recursion, application and its implementation
C203.5	Identify the alternative implementations of data structures with respect to its performance to solve a real world problem.

Q. No.	**Questions**	**CO**	**BL**
	PART- A: Attempt All Questions (5x2 = 10Marks)		
1.	List the various operations on linked list.	**CO1**	**L2**
2.	Explain tail recursion	**CO4**	**L2**
3.	Give some applications of stack.	**CO3**	**L2**
4.	What is minimum spanning tree? Give its application.	**CO1**	**L4**
5.	Explain threaded binary tree.	**CO1**	**L2**
	PART-B: Attempt ANY FOUR Questions (5x4 = 20Marks)		
6.	What do you understand by time and space trade off? Define the various asymptotic notation?	**CO2**	**L2**
7.	Write the recursive solution for Tower of Hanoi problem (Consider for 3 disks)	**CO4**	**L3**
8.	What is Binary Create a BST tree for the following elements: 11,6,8,19,4,10,5,,17,43,49,31	**CO1**	**L4**
9.	What is hashing and explain the collision resolution techniques used in hashing	**CO5**	**L3**
10	Transform the following expression into its equivalent postfix expression using stack: A + (B * C - (D / E † F) * G) * H	**CO1**	**L3**
	PART-C: Attempt ANY TWO Question (2x15 = 30Marks)		
11.	a) What do you mean by order of complexity? Explain various notions to represent order of complexity (5)	**CO2**	**L2**
	b)Find the minimum spanning tree in the following graph using Kruskal Algorithm.(10) 	**CO5**	**L5**

12.	(a) Explain binary tree traversals with example(5)	**CO1**	**L3**
	b) With given preorder and inorder traversal construct Binary tree. Explain steps followed. Preorder : 1,2,4,8,9,10,11,5,3,6,7 Inorder : 8,4,10,9,11,2,5,1,6,3,7(10)	**CO1**	**L2**
13.	(a) Applythe Floyd Warshall algorithm on following graph and compute all pair shortest path  (5)	**CO5**	**L6**
	b) Describe the Dijkestra algorithm to find the shortest path. Let‘s consider the source vertex is S.  	**CO5**	**L6**