Date : 2024-04-13 / Time : 11:00 am - 01:30 pm

Q.P. Code: 00000683

[Time:2.30 Hrs]	**[Marks:75]**
Please check whether you have got the right question paper.	
N.B:	1. All question are compulsory. 2. Figures to the right indicate full marks. 3. Students answering in the regional language should refer in case of doubt to the main text of the paper in English.

Q.1		Attempt **any three** of the following: a. What is an algorithm? What are the characteristics of an algorithm? b. Write the difference between Algorithm and Pseudocode. c. Define Complexity of an algorithm and what are the various requirements and cases of complexity measures of an algorithm. d. Write an algorithm for linear search in an array. e. Write an algorithm for performing traversing array elements operations on an array. f. Give the difference between Linear and Non Linear Data Structure.	15
Q.2		Attempt **any three** of the following: a. Write and explain an algorithm to find the largest element in one-way(single) linked list b. Write a Program to print the element of Array. c. What are the different types of Linked List. d. Mention the difference between Array and Linked List e. Write a short note on Sparse Arrays. f. Comparison between Singly Linked List and Doubly Linked List.	15
Q.3		Attempt **any three** of the following: a. Write an algorithm to perform Push and Pop operation in stack data structure. b. Convert the following expression in postfix and prefix notations. a*b*c^2+d+(c/d+c) c. Explain the concept of recursion with the help of logic to find the Factorial of a number. d. Convert the given infix to postfix expression using stack. 5 * 3 + (4 / 2) – 8 – 3 e. What are the different operations performed on Queue. f. Write a short note on Circular Queue.	15
Q.4		Attempt any three of the following:	15

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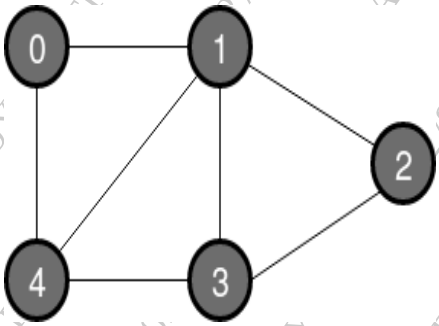
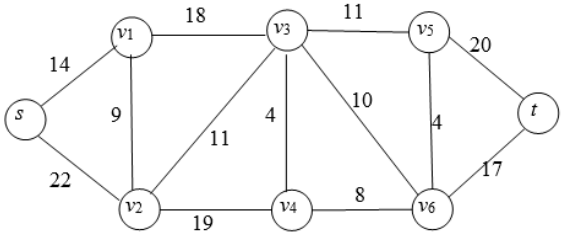
		a. Solve the following using Bubble sort. 15, 7, 10, 2, 20, 11 and 18 b. Reconstruct the binary tree whose Inorder and Preorder traversals are: Inorder Traversal: 9, 5, 1, 7, 2, 12, 8, 4, 3, 11 Preorder Traversal: 8, 5, 9, 7, 1, 12, 2, 4, 11, 3 c. Explain the memory representation of binary tree d. Explain the following terms: i) Path ii) Height iii) Leaf iv) Siblings v) Root e. Write an algorithm to insert an element in binary search tree f. Draw the min heap with the following elements 70, 80, 50, 45, 95, 25, 30, 100, 90, 85, 15, 10	
Q.5		Attempt any three of the following: a. What are Applications of the Graph b. Describe the following 1) Undirected Graph 2) Mixed Graph 3) Loop 4) Weighted Graph 5) Isolated Node c. Consider the following graph and perform any one method of Graph Traversal starting from the vertex 1  d. Write a short note on Folding Hashing method e. Write a difference between Kruskal's algorithm and Prim's algorithm f. Find the minimum spanning tree for the following graph using Prim's algorithm and starting vertex S  	15