Reg. No. : | | | | | | | | | | |

Question Paper Code: 94829

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Fourth Semester

Electronics and Communication Engineering

19UIT429- Introduction to Data Structures and Algorithms

(Regulations 2019)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1.	Compare linked list and linear array and contrast which one will you prefer to use and when? Justify your answer.	CO3- Ana
2.	Analyze which is more useful? By comparing the run time complexity of single linked list and double linked list. Justify your answer.	CO3- Ana
3.	What is the difference between Linear array and Linked List?	CO1- U
4.	What type of memory allocation is referred for Linked lists? Why?	CO1- U
5.	Define stack and list the application.	CO1- U
6.	What do you understand by stack overflow and underflow?	CO1- U
7.	Differentiate between a stack and queue.	CO1- U
8.	How does a stack implemented using linked lists differ from a stack implemented using an array?	CO1- U
9.	Draw the binary expression tree that represents the following postfix expression: A B + C * D –	CO2- App
10.	How is an AVL tree better than a binary search tree? Justify your answer.	CO3- Ana

PART – B (5 x 16= 80Marks)

11.	(a)	Explain the different approaches to design an algorithm with neat diagram.	CO1-U	(16)
		Or		
	(b)	Explain and diagrammatic illustrations how insertion and deletions can be performed on singly linked list.	CO1-U	(16)

12. (a) Write a C program to perform a push, pop and display operations on stack ADT using array. CO1-U (16)

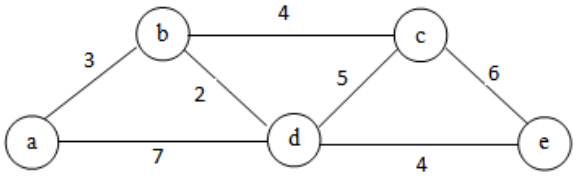
Or

(b) Develop an algorithm and diagrammatic illustrations the various operations that can be performed on a queue using array. CO1-U (16)

13. (a) Construct a Binary Search tree from the following set of elements 25, 14, 2, 45, 78, 1, 3, 4, 5, 20, 11, 56, 90, 85, 79, 65 and traverse the tree built in In-order, Postorder and Preorder. CO2-App (16)

Or

(b) Find a shortest path between any two vertices of a weighted graph or digraph and Estimate the efficiency of Dijkstra's Algorithm. CO2-App (16)



14. (a) Explain Binary Tree and Traversing a binary Tree with example. CO1- U (16)

Or

(b) Explain Binary Search Tree with example. CO1- U (16)

15. (a) Write a C program to perform insert, delete and display operations on queues ADT using linked list. CO2-App (16)

Or

(b) Apply Kruskal's algorithm to find the minimum spanning tree for the following graph and write an algorithm of Kruskal's Algorithm. CO2-App (16)