

Reg. No.																			
----------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code	12749
---------------------	-------

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Sixth Semester

Electrical and Electronics Engineering

20ITPC301– DATA STRUCTURES

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

	Marks	K- Level	CO
1. List any four applications of stack.	2	K1	CO1
2. Illustrate how circular queue is better than standard linear queue and Why?	2	K3	CO1
3. Difference between singly linked list and circular linked list.	2	K2	CO2
4. List the advantages and disadvantages of linked lists over arrays.	2	K1	CO2
5. State the properties of Heap.	2	K1	CO3
6. Define Binary Search Tree.	2	K1	CO3
7. Differentiate breadth first search and depth first search.	2	K2	CO4
8. State about Euler circuit.	2	K1	CO4
9. Define Double Hashing.	2	K1	CO6
10. State about the collision in hashing.	2	K1	CO6

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Show the procedure to convert the infix expression to postfix expression and also Convert the expression $(A*B)+(C/D)-(D+E)$ to its postfix form.	13	K3	CO1
--	----	----	-----

OR

b) Illustrate the concept of Linked List implementation of a Queue ADT with suitable example.	13	K3	CO1
---	----	----	-----

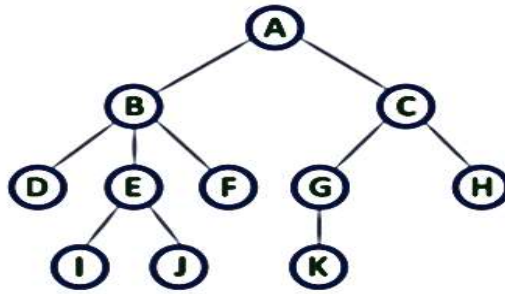
12. a) Examine with an example and algorithms to implement the singly linked list and perform all the operations on the created list.	13	K3	CO2
---	----	----	-----

OR

b) Apply and recommend an algorithm to add two polynomials represented by linked list representation. Apply the function for the following input.	13	K3	CO2
---	----	----	-----

$$A=3x^2+2x+1, \quad B=8x^2+3x+10$$

13. a) Design the tree traversal and apply the concept of tree traversal to find the inorder, preorder, postorder traversal for the following tree. 13 K3 CO3

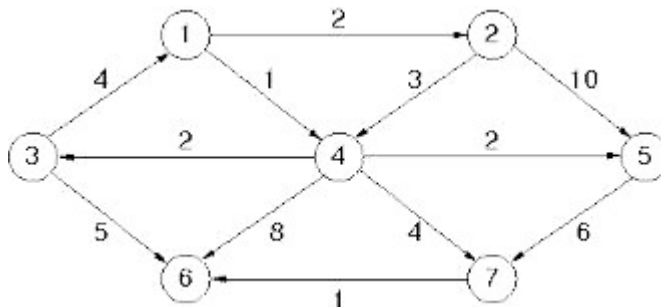


OR

- b) Compute the AVL Tree for 3, 2, 1, 4, 5, 6, 7, 16, 15, 14 and write the insertion routine for AVL Tree. 13 K3 CO3
14. a) Apply the Prim's algorithm to find the minimum spanning tree with an example. 13 K3 CO4

OR

- b) Apply the Dijkstra's algorithm to find the shortest path for the following graph. 13 K3 CO4



15. a) Explain in detail about rehashing with an example. 13 K2 CO6
- OR**
- b) Discuss in detail about Extendible hashing with an example 13 K2 CO6

PART - C (1 × 15 = 15 Marks)

16. a) Write an algorithm to sort a set of 'N' numbers using bubble sort and demonstrate the sorting steps for the following set of numbers: 30, 52, 29, 87, 63, 27, 19, 54. 15 K3 CO5
- OR**
- b) Describe the linear search algorithms with an example to search the number from the array. 15 K2 CO5