

15 FEB 2023

Reg. No.

Question Paper Code

11716

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022

Third Semester

Information Technology

(Common to Computer Science and Engineering, Computer and Communication Engineering & M.Tech. - Computer Science and Engineering)

20ITPC301 - DATA STRUCTURES

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|---|-------------------------------|
| 1. Define Abstraction. | 2,K1,CO1 |
| 2. List any four applications of Queue. | 2,K1,CO1 |
| 3. Compare Arrays and Linked list. | 2,K2,CO2 |
| 4. Give the advantages of doubly Linked list. | 2,K1,CO2 |
| 5. Differentiate Linear and Non Linear data structures. | 2,K2,CO3 |
| 6. What is Binary Search Tree? | 2,K1,CO3 |
| 7. Define Spanning Tree. | 2,K1,CO4 |
| 8. How do you represent a Graph? Give example. | 2,K1,CO4 |
| 9. Write the procedure of Selection Sort. | 2,K1,CO5 |
| 10. What is the usage of rehashing? | 2,K1,CO5 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Write the step by step procedure and code snippet to evaluate the arithmetic expression in stack. 13,K2,CO1
- OR**
- b) Explain in detail about Queue and its operation with neat diagram. 13,K2,CO1
12. a) Describe in detail about array implementation of list. 13,K2,CO2
- OR**
- b) Implement the polynomial manipulations in linked list. Explain its operations. 13,K2,CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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13. a) Illustrate the Inorder, Preorder and Postorder traversal in Binary Tree with suitable example. 13,K4,CO3

OR

b) Outline the AVL Tree. Illustrate the procedure to Insert an element in an AVL Tree. 13,K4,CO3

14. a) Explain in detail about Breadth First Search (BFS) with an suitable example. 13,K2,CO4

OR

b) Explain in detail about Dijkstra's algorithm with a suitable example. 13,K2,CO4

15. a) Illustrate the Binary Search algorithm for the following data set. 66, 6, 16, 26, 56, 46, 36, 86, 76. 13,K2,CO5

OR

b) Illustrate the Hash function with suitable example. 13,K2,CO5

PART - C (1 × 15 = 15 Marks)

16. a) Display the Voters Name list in ascending order using Bubble Sort algorithm. Explain the every step in an algorithm. 15,K4,CO6

OR

b) What is the searching algorithm used in your mobile phone contact list. Justify your answer. 15,K4,CO6