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DCCA103

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I Semester B.C.A. Degree Examination, March/April - 2024

COMPUTER SCIENCE**Data Structures****(NEP Scheme 2021)****Paper : CA-C3T****Time : 2½ Hours****Maximum Marks :60****Instructions to Candidates:****Answer all the Sections.****SECTION - A****I. Answer any Four questions. Each question carries 2 marks.****(4×2=8)**

1. What is non linear Data Structure?
2. What is the complexity of an algorithm?
3. What is Abstract data type? Give an example.
4. Give two differences between Binary Tree and Binary search tree.
5. Mention any two types of graphs.
6. Define sparse matrix.

SECTION - B**II. Answer any Four questions. Each question carries 5 marks.****(4×5=20)**

7. Write applications of Data structure.
8. How single and two dimensional arrays are represented in memory? Explain with neat diagram.
9. Write an algorithm for Euqueue and Dequeue operations?
10. Evaluate the following infix to prefix. $Q = (P+R)/(T*U)$.
11. Explain Linear search algorithm.
12. Explain AVL tree with its operations.

[P.T.O.]



SECTION - C

- III. Answer any Four questions. Each question carries 8 marks. (4×8=32)**
- 13.** a) Explain different Asymptotic Notations. (5)
b) Write an algorithm to delete an element in an array. (3)
- 14.** What is recursion? Write an algorithm for Tower of Hanoi Problem with diagram. (8)
- 15.** a) Write an algorithm for Bubble sort. (3)
b) Sort the following elements using bubble sort. (5)
36 48 26 43 15
- 16.** What is stack? Write a program to implement stack operations using an array. (8)
- 17.** a) Define BST. (2)
b) Construct a BST for the given list. (6)
56 48 10 65 72 44 50
- 18.** a) What is Hashing? Explain hash table and hash function. (3)
b) Explain DFS algorithm through stack concept. (5)
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