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VELAGAPUDI RAMAKRISHNA
SIDDHARTHA ENGINEERING COLLEGE
(AUTONOMOUS)

II/IV B.Tech. DEGREE EXAMINATION, MARCH/APRIL, 2019
Third Semester

COMPUTER SCIENCE AND ENGINEERING

14CS3303 DATA STRUCTURES

Time: 3 hours

Max. Marks: 70

Part-A is compulsory

Answer One Question from each Unit of Part - B

Answer to any single question or its part shall be written at one place only

PART-A

10 x 1 = 10M

1.
 - a. Define Time complexity.
 - b. Difference between stack and queue.
 - c. Define circular linked list.
 - d. Mention the types of linked list.
 - e. Mention binary tree traversal techniques.
 - f. What are sibling nodes?
 - g. What is the worst case time complexity for binary search?
 - h. Define recursion.
 - i. What is min heap representation?
 - j. What is linear probing?

UNIT-I

2. a. Write a program to implement stack operations using arrays. **7M**
 b. What do you think about queue? Explain its representation and operations. **8M**

(or)

3. a. Evaluate the postfix expression: 6 5 2 3 + 8 * + 3 + *. **8M**
 b. Write a program to implement Queue using arrays. **7M**

UNIT-II

4. a. Write a C program to perform following operations in a singly linked list **9M**
 i) Creation of linked list
 ii) Adding a node at the beginning
 iii) Delete a node at a given position
 b. Differentiate between arrays and linked list. **6M**

(or)

5. a. Write an algorithm to implement the following operations on circular linked list **8M**
 i) creation ii) insertion
 b. Write short notes on **7M**
 i) linked stacks ii) linked queues

UNIT-III

6. a. What is a binary tree and explain the properties of binary tree? **6M**
 b. Construct a binary tree from a given preorder and inorder sequence:
 Preorder : A B D G C E H I F
 Inorder : D G B A H E I C **9M**

(or)

7. a. Define tree and explain the representation of trees. **6M**
 b. Write a program to insert a node into a binary search tree. **9M**

UNIT-IV

8. a. Write an algorithm for Heap sort. **6M**
 b. Form a heap tree from the set of elements (40, 80, 35, 90, 45, 50, 70) and sort the data using heap sort algorithm. **9M**

(or)

9. a. Explain about collision resolution strategies with neat examples. **7M**
 b. Write the algorithm for selection sort and sort the following elements 65, 70, 75, 80, 50, 60, 55, 85, 45 using Selection sort. **8M**

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