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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations July-2021

DATA STRUCTURES THROUGH C

(Common to CSE & CSIT)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

- 1 a Discuss the following operations on One-Dimensional array with algorithms. **6M**
- (i) Searching (ii) Sorting (iii) Traversing
- b Write a detailed notes on **6M**
- (i) Static representation of Single Linked List
- (ii) Dynamic representation of Single Linked List

OR

- 2 a Write short notes on **6M**
- (i) Sparse matrix manipulation (ii) Polynomial Addition.
- b Explain about all types of Deletion operations on D.L.L. **6M**

UNIT-II

- 3 a Explain the Tower of Hanoi problem containing 3 discs and write the algorithm to solve it. **6M**
- b How to convert an Infix expression into Postfix expression, explain through an example. Convert the following Infix expression to Postfix: **6M**
- $(A+B)^C-(D * E)/F$. Write the algorithm for it.

OR

- 4 a Define Circular Queue. How to insert and delete a node into and from it. Write algorithms for them. **6M**
- b Write a detailed notes on **6M**
- (i) DEQUE (ii) Priority Queue: with their representations.

UNIT-III

- 5 a Define the following terms with representations **6M**
- (i) Binary Tree (ii) Binary Search Tree
- b How to represent a binary tree using Linked List explain it? **6M**

OR

- 6 a Discuss about traversal operation on a Binary search tree write the algorithms for them. 6M
- b Construct a Max heap tree for the following elements and sort them in ascending order: 76 69 5947 8599 98. 6M

UNIT-IV

- 7 a Apply Divide-and-Conquer method to implement Quick sort and sort the following elements write the algorithm for it 22 71 49 53 7. 6M
- b Apply partition method to implement Quick sort and sort the following elements 52 48 91 33 19 67. 6M

OR

- 8 a Write short notes on: (i) Simple Merging (ii) Binary Merge. 6M
- b What is the logic behind in Internal Merge sort? Discuss in detail. 6M

UNIT-V

- 9 a Write and explain the algorithm for Linear search using arrays? 6M
- b Write and discuss the algorithm for Binary search through an example? 6M

OR

- 10 a Write short notes on: (i) Open Hashing (ii) Closed Hashing? 6M
- b Compare the process of Linear search using array and linked list. 6M

*** END ***