



MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

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I B.Tech II Sem Regular End Examination, September 2021

Data Structures

(CSC, CSD, CSE, CSI, CSM, ECE, INF, MECH)

Time: 3 Hours.

Max. Marks: 70

Note: 1. Answer any FIVE questions.

2. Each question carries 14 marks and may have a, b as sub questions.

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|---|----|--|----|-----|-----|
| 1 | a) | Distinguish between linear and non linear data structures. | 7M | C01 | BL2 |
| | b) | List an algorithm to perform the insertion operations in a doubly linked list. | 7M | C01 | BL1 |
| 2 | a) | Describe about the applications of linked lists. | 7M | C01 | BL2 |
| | b) | Discuss the deletion procedure for Single linked lists. | 7M | C01 | BL2 |
| 3 | a) | List and explain about the basic operations that can be performed on a stack. | 7M | C02 | BL4 |
| | b) | What is Queue? Explain its types. | 7M | C02 | BL4 |
| 4 | a) | Write the procedure to convert infix to postfix expression. | 7M | C02 | BL1 |
| | b) | Explain Bubble sort with an example. | 7M | C03 | BL4 |
| 5 | a) | Briefly write about Selection sort with an example. | 7M | C03 | BL2 |
| | b) | Explain linear search with an example. | 7M | C03 | BL4 |
| 6 | a) | Write the procedure for inserting and deleting a node in a binary search tree. | 7M | C04 | BL1 |
| | b) | If the depth of the binary tree is k, the maximum number of nodes in the binary tree is $2^k - 1$. Justify. | 7M | C04 | BL3 |
| 7 | a) | Explain a full binary tree. Give an example. | 7M | C04 | BL4 |
| | b) | Write the BFS graph traversal algorithm with suitable example. | 7M | C05 | BL1 |
| 8 | a) | Discuss types of graphs with examples. | 7M | C05 | BL2 |
| | b) | Illustrate Linked representation of graphs. | 7M | C05 | BL4 |