Sri
SAI RAM INSTITUTE OF TECHNOLOGY
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DEPARTMENT OF INFORMATION TECHNOLOGY

**B.E./ B. TECH DEGREE EXAMINATION**
**CONTINUOUS ASSESSMENT TEST- II**
**(Common to CSE & IT)**

**Subject : Data Structures** | **Duration : 1.30 Hrs**
**Subject code : CS8391** | **Date : 16.09.2020**
**Year/ Sem : II/III** | **Max. Marks : 50**

**PART A — (5 × 2 = 10 Marks)**
**Answer all questions**

1. Define Queue. [U][CO2]
2. What is the need for Priority queue? [U][CO2]
3. Define node, degree, siblings, depth/height, level. [E][CO3]
4. Give the prefix and postfix form of the expression (a + ((b*(c-e))/f). [C][CO3]
5. Define Binary Tree, Full Binary Tree and Complete Binary Tree. [E][CO3]

**PART B — (2 x 13 = 26 Marks)**
**Answer the questions**

1. a) Describe about Queue ADT using array in detail. [C][CO2]

**OR**

b) Explain the linked list implementation of Queue ADT in detail? [C][C02]

2. a ) With suitable examples, explain binary tree traversal algorithms. [C][CO3]

**OR**

b) Write an algorithm to insert an item into a binary search tree. Insertion of Binary Search Tree.

**PART C — (1 x 14= 14 Marks)**
**Compulsory Question**

3. (i)Explain the possible AVL rotation with algorithm and example . [C][CO3]
(ii)Insert the following elements in the empty tree and how do you balance the tree after each element Insertion?
Elements:2,5,4,6,7,9,8,3,1,10 [C][CO3]

**********ALL THE BEST**********

**COURSE OUTCOMES (CO)**
**At the end of the course the students will be able to**

| R2017 | CS8391-DATA STRUCTURES | L | T | P | C |
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|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |
| C203.1 | Implement abstract data types for Linear Data Structures – List | | | | |
| C203.2 | Implement abstract data types for Linear Data Structures - Stacks and Queues | | | | |
| C203.3 | Implement abstract data types for Non Linear Data Structures - Trees | | | | |
| C203.4 | Implement abstract data types for Non Linear Data Structures - Graphs | | | | |
| C203.5 | Critically analyze the various sorting algorithms and understand appropriate hash functions that result in a collision free scenario for data storage and retrieval | | | | |