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

B.Tech III Year II Semester Regular Examinations May 2019

ADVANCED DATA STRUCTURES THROUGH C++

(CSE)

Time: 3 hours

Max. Marks: 60

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

**UNIT-I**

- 1 a Write a C++ Program for the following specifications.  
Class: AddressBook  
Data Members: Name, Address, PhoneNo, Email  
Member functions: InsertData(), DisplayData(), SearchPhNo(). 8M
- b Explain about the Access Controls? 4M

**OR**

- 2 a Describe the constructor and destructor? Write a C++ program to implement copy constructor? 7M
- b Describe 'this' pointer and friend function with suitable examples 5M

**UNIT-II**

- 3 a Write a C++ program to overload binary plus (+) operator to add two strings using Operator Overloading concept. 6M
- b What is Inheritance? Explain types of Inheritances? Give an example of hybrid inheritance. 6M

**OR**

- 4 a Define stream I/O? Explain the use of ifstream and ofstream classes? Write a C++ program to check whether the given file is available or not. 6M
- b What are abstract classes? Define the rules to create an abstract class with example. 6M

**UNIT-III**

- 5 a Explain about the Binary Search Tree? What are the rules to create a BST? Give an example. 7M
- b Compare BFS and DFS with examples and also with a good example 5M

**OR**

- 6 a Write the C++ code for Deletion operation of Binary Search Tree (BST)? Delete a leaf node, delete a node having one child and delete a node having two children. 7M
- b Explain about the Threaded Binary Tree(TBT) with an example. 5M

**UNIT-IV**

- 7 a Construct a Min Heap for the following Elements: 40 12 3 9 50 26 16 5 14 30 7M
- b Explain Fibonacci Heaps with an example 5M

**OR**

- 8 a Define Dictionary. Define Hash Function and Mapping. 6M
- b Construct a Hash table for the values 12, 5, 34, 6, 42, 8, 45, 21, 24. Use Hashing Function as MOD 7. 6M

**UNIT-V**

- 9 a Explain clearly the operations that can be performed on a B+ Tree with example 7M
- b Explain the properties of Red Black Trees with an example 5M

**OR**

- 10 a Define M-Way Search Tree. How the height has been balanced in M-way Search Trees. 7M
- b Explain Optimal Binary Search Tree with an example. 5M

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