

4.5.19

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B.E / B.Tech/ B.Arch ( Full Time ) DEGREE END SEMESTER EXAMINATIONS, APR/MAY 2019

ELECTRONICS AND COMMUNICATION ENGINEERING

CS8251- DATA STRUCTURES AND OBJECT ORIENTED PROGRAMMING IN C++

(Regulation – 2012)

Second Semester

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Distinguish between 'structures' in C and 'classes' in C++.
2. What is the use of reference variable? Give example.
3. Define abstract class.
4. What is destructor? When it is mandatory?
5. How do you find the depth and height of a node in a tree? Give example
6. Define Big-Oh notation.
7. How are graphs represented inside a computer's memory? Give example.
8. Compare linear and binary search.
9. Write the merits of threaded binary tree.
10. State the difference between merge and quick sort.



Part – B ( 5 x 16 = 80 marks)

11. Write an algorithm for quicksort and explain the concept of quicksort with an example. (16)

12. a) Explain the following with example.

(16)

- (i) Copy constructor
- (ii) Dynamic constructor
- (iii) Static function
- (iv) Constant function

(OR)

b) Create a class called matrix with a constructor to initialize the class member and write operator overloaded functions for the following operations in the class. (16)

- (i)  $M3 = M1 + M2$  //where M1, M2 and M3 are objects of the class
- (ii)  $M1 += 10$
- (iii)  $M2 = M1$

13. a) (i) Explain the three basic type conversion operations with example code. (10)

(ii) Create a class called employee with three data members (emp.name, emp.no and salary) and two member functions (get details () and display details ()). Create array of employees and a pointer pointing to an array of employees. Write the function display to display the details of all the employees using the pointer. (6)

(OR)

b) What is inheritance? What are its types? Explain each type of inheritance with suitable example. (16)

14. a) Explain array implementation of stack and queue data structure with examples. (16)

(OR)

b) Write the significance of linked list and write a routine to perform the following operation on it:

- (i) insert at beginning
- (ii) insert at end
- (iii) delete at beginning
- (iv) delete at end
- (v) delete after a specified node.

(16)



15. a) What are the applications of trees? Explain the three standard ways of traversing a binary tree with recursive algorithms. Give example for each traversal. (16)

(OR)

- b) Write a routine for BFS and DFS and perform DFS and BFS on the following graph starting from vertex A. Use alphabetical order when there is a choice exist. (16)

