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**Question Paper Code : 91396**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Third Semester

Electronics and Communication Engineering

EC 2202/EC 33/080290009/10144 EC 303 — DATA STRUCTURES AND OBJECT  
ORIENTED PROGRAMMING IN C++

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define constructor.
2. What is operator overloading? Enlist the operators that can not be overloaded.
3. How to initialize a pointer?
4. What is runtime polymorphism?
5. How data is stored in a QUEUE structure?
6. What is binary heap and list its types?
7. Consider a B-tree how to find the minimum key stored in the tree also write the time taken in terms of number of disk accesses.
8. Differentiate between trees and graphs.
9. Sort the numbers 34, 12, 25, 14 using merge sorting technique.
10. What is meant by dynamic programming?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the control structures available in C++ with suitable examples. (8)  
(ii) Explain the structure of C++ program with an example. (8)

Or

- (b) (i) Define constructor. Write different types of constructors in detail. (8)  
(ii) Write a C++ program to swap two numbers using friend function. (8)

12. (a) (i) Write a C++ program to illustrate the concept of hierarchical inheritance. (8)  
(ii) Give detailed use of noreplace and nocreate file opening modes with example. (8)

Or

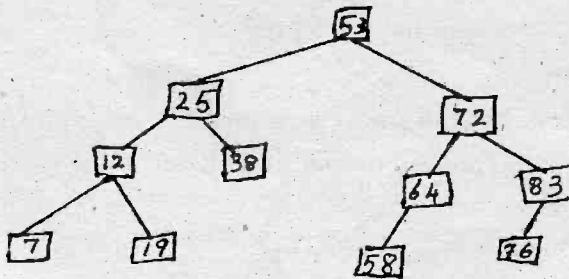
- (b) (i) Write a C++ program to implement virtual function. (8)  
(ii) Explain the exception handling mechanism of C++ in detail. (8)

13. (a) (i) Explain why algorithm having exponential time complexity are not preferred. (8)  
(ii) With a simple program explain various operations of linked list. (8)

Or

- (b) (i) Consider the array Heap = [3, 5, 6, 7, 20, 8, 12, 9, 15, 17, 30] . Consider an empty heap. Construct a MAX HEAP while inserting these values one by one. Display the heap after each insertion. (10)  
(ii) Briefly discuss about stack and its operations. (6)

14. (a) Draw the result of inserting 20, 10 and 24 one by one into the AVL tree given below. Draw the tree after each insertion. Explain the operations of the AVL tree. (16)



Or

- (b) (i) Explain spanning tree and minimal spanning tree with examples. (8)
- (ii) Explain the Network flow problems and their solutions. (8)
15. (a) (i) Sort the following using quick sorting.  
15, 25, 70, 07, 11, 65, 81, 57. (8)
- (ii) Explain insertion sort with its time complexity. (8)

Or

- (b) (i) Explain Greedy algorithm. (8)
- (ii) Determine the shortest path for the graph given below. (8)

