Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 71443

ECE – I

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

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. State the characteristics of object oriented programming.

2. What is the significance of static data and static member function in object oriented programming?

3. What are virtual functions? Mention its usage.

4. Mention the operators that cannot be overloaded.

5. Compare LIFO and FIFO.

6. List the applications of Binary heap algorithm.

7. What are the various types of rotations in AVL tree during the insertion of a node?

8. What do you mean by NP- completeness?

9. Mention any four applications of greedy algorithm.

10. What do you mean by dynamic programming? List some of its applications.
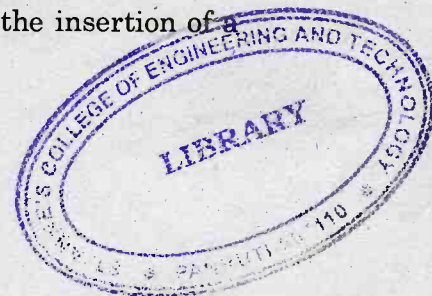
PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the concept of operator overloading with suitable example. (8)

        (ii) Explain the use of friend functions in C++ with an example. (8)

Or

(b) (i) Explain the use of function overloading in C++ with a complete example. (8)

        (ii) Explain constructors and destructors with proper example. (8)

12. (a) (i) Explain the concept of inheritance and various types inheritance in detail. (8)

        (ii) Write about exception handling in C++. (8)

Or

(b) (i) Describe the various file handling templates in detail. (8)

        (ii) Define friend class and specify its importance. Explain with suitable example. (8)

13. (a) (i) Explain Priority Queues. How are binary heaps used in the same? (8)

        (ii) Explain the properties of heap. (8)

Or

(b) (i) Write a program to implement stack and its operations. (8)

        (ii) What is hashing? Explain the various hash functions with example. (8)

14. (a) Discuss the different methods of traversing a binary tree with algorithms. (16)

Or

(b) Explain Prim's and Kruskal's algorithm for computing the minimal spanning tree. (16)

15. (a) Explain the algorithm of Quick sort by sorting the following set of numbers as an example.

32 42 47 57 62 37 67 22 32 (16)

Or

(b) (i) Write a program to implement binary search and compute its complexity. (8)

        (ii) Explain divide and conquer technique with a complete example. (8)

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