ECE / BIO MED 14/11/16 F.N

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80332

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Third Semester

Electronics and Communication Engineering

EC 6301 — OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES

(Common to Biomedical Engineering and also common to Fourth Semester Medical Electronics, Robotics and Automation Engineering)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by default constructor?
2. State the difference between structure and class.
3. What is the role of this pointer?
4. Define virtual function.
5. What is a Data Structure? How it is classified?
6. List the applications of linked list.
7. What are the two ways of representing binary tree?
8. Differentiate breadth first and depth first search strategies.
9. What is the time complexity of linear search?
10. Name the sorting techniques which use the divide and conquer strategy.

PART B — (5 × 13 = 65 marks)

11. (a) Explain in detail about the features of object oriented programming. (13)

Or

(b) (i) Write a program for swapping two numbers using friend function. (6)

(ii) Write a program to find the area of a rectangle and triangle using function Overloading. (7)

12. (a) Explain the concept of composition with example. (13)

Or

(b) Describe the types of inheritance in C++ with an example. (13)

13. (a) Implement insertion, deletion and search operations in single linked list. (13)

Or

(b) Develop an algorithm to implement Queue ADT. Give relevant examples and diagrammatic representation. (13)

14. (a) Discuss the graph traversals with suitable algorithms and examples. (13)

Or

(b) Explain the algorithm for union and find operations in disjoint sets. (13)

15. (a) Explain the algorithm of Quick sort by sorting the following set of numbers as an example : 42 47 52 57 62 37 32 27 22. (13)

Or

(b) Write the algorithm to perform binary search on an array and demonstrate with an example. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Implement the ATM transaction in C++. (15)

Or

(b) Define an abstract class called Employee. Derive two classes called Hourly Employee and Salaried Employee. Hourly Employee has number of hours (integer), and wage per hour (float).

Salaried Employee has salary of type float. Calculate salary ( ) in an abstract function in class employee which inherited by derived classes. Write a main program to create objects of all classes and calculate salary of each object. (15)

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