B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 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. Define constructor. List the type of constructor ?

2. List the operator that cannot be overloaded.

3. Write a simple C++ program to demonstrate the virtual functions.

4. State about cast operator.

5. Convert the infix expression $a + b*c + (d*e + f)*g$ into postfix.

6. Define sentinel nodes, header node and tail node.

7. Draw expression tree for $(a + b * c) + ((d * e + f) * g)$

8. What do you mean by articulation points ?

9. List the advantages of quick sort.

10. Which search is faster and Why ?

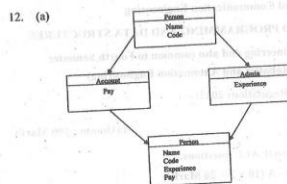PART – B (5 × 16 = 80 Marks)

11. (a) Discuss about function overloading with varying number of arguments and data
         types.   (16)

OR

    (b) (i)   List the characteristics of friend function.   (4)

        (ii) Write short notes on destructor.   (4)

        (iii) Explain in detail about static class member with employee class program. (8)

12. (a)

Consider the class network of above figure. The class **master** derives
information from both account and admin classes which in turn derive
information from the class **person**. Define all the four classes and write a
program to create, update and display the information contained in **master**
objects.   (16)

OR

    (b) Explain the polymorphism with example   (16)

13. (a) (i)   Write the ADT operation for insertion and deletion routine in stack.   (8)

        (ii) Explain the process of conversion from infix expression to postfix using
              stack.   (8)

OR

    (b) Discuss about addition of two polynomials using linked list with necessary ADT. (16)

14. (a) Draw the binary search tree for the following input list 25, 45, 12, 60,75,92.10.
         Trace an algorithm to delete the nodes 25, 75, 10 from the tree.   (16)

OR

    (b) Discuss types of graph traversal and explain each with suitable examples.   (16)

15. (a) (i)   Write a c++ program to implement quick sort.   (8)

        (ii) Sort the sequence 4,7,2,0,-8,5 using Insertion sort.   (8)

OR

    (b) Explain the binary search with sample program.   (16)