K16P 0817

Reg. No. : ....

Name : ....

II Semester M.C.A. Degree (Reg./Supple./Imp.) Examination, July 2016
(2014 Admn. Onwards)
MCA 2C08 : DATA STRUCTURES AND ALGORITHMS USING C++

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **any ten** questions. **Each** question carries **three** marks.

1. Compare and contrast inline function and friend function.

2. What are the purpose of new operator in C++ ?

3. What is virtual base class, give example.

4. How the file operations are performed in C++ ?

5. Discuss any one representative of a priority queue.

6. What are the merits and demerits of arrays and linked lists ?

7. What are the applications and basic operations of stack ?

8. Write the pseudo code for in-order tree traversal.

9. How binary tree is different from binary search tree ?

10. What are the applications of AVL tree ?

11. Compare the time and space complexities of different sort techniques.

12. Mention the applications of Graph.   (10×3=30)

SECTION – B

Answer **all** questions. **Each** question carries **ten** marks.

13. a) What are the uses of operator overloading ? Write a C++ program to evaluate the statement A = B + 3, where A and B are the objects of the same class.

      OR

    b) Explain the copy constructors and destructors of C++ using suitable examples.

P.T.O.

14. a) Explain the hierarchical and hybrid inheritance with suitable examples.

   OR

   b) Discuss the file stream classes defined inside fstream.h header file.

15. a) Give two ordered lists pointed by list 1 and list 2. Write an algorithm to merge them into a single ordered link lists.

   OR

   b) Design an algorithm to convert infix expression to its equivalent postfix expression.

16. a) Write an algorithm to perform insert, delete and display operations on a queue.

   OR

   b) What are various searching techniques ? Discuss their merits and demerits.

17. a) Write an algorithm for heap sort and trace the algorithm for the following :
   1, 2, 3, 5, 4, 7, 12, 1, 9, 8.

   OR

   b) Define graph, direct graph and connected graph, explain adjacency matrix representation of a graph. (5×10=50)