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Name.....

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Reg. No.....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2014

(UG-CCSS)

Core Course

Computer Science

3B 05—DATA STRUCTURE AND OBJECT ORIENTED PROGRAMMING USING C++

(2009–2011 Admissions)

Three Hours

Maximum : 30 Weightage

I. Answer *all* questions :—

- 1 The method by which objects of one class gets the properties of objects of another class is known as _____.
- 2 The manipulator in C++ which has the same effect as using the newline character '\n' is _____.
- 3 A function which is not in the scope of the class, but it has full access to the private data members of the class is known as _____.
- 4 In the prototype `void sum (int &);` arguments are passed by _____.
- 5 In C++, _____ facility is used to implement communication between various objects.
- 6 If all the member functions of one class act as friend functions of another class, then the former class is called _____.
- 7 _____ operator is used in C++ to dynamically allocate the memory.
- 8 The complexity of binary search algorithm is _____.
- 9 The postfix form of $A + B - C$ is _____.
- 10 In _____ tree traversal we visit the root of the tree last.
- 11 The maximum degree of any vertex in a simple graph with n vertices is _____.
- 12 The OS of a computer may periodically collect all the free memory space to form contiguous block of free space. This is called _____.

(12 × ¼ = 3 weightage)

II. Answer *all* questions :

- 13 Distinguish between Data abstraction and encapsulation.
- 14 When do we declare a member of a class static ?

Turn over

- 15 List out the different uses of scope resolution operator.
- 16 Explain about virtual base class.
- 17 Distinguish between PUSH and POP operations.
- 18 Write an algorithm to insert a node at the end of a singly linked list.
- 19 What are circular queues ?
- 20 What do you mean by adjacency matrix ?
- 21 Write a note on hashing.

(9 × 1 = 9 weights)

III. Answer any *five* questions :

- 22 What is the advantages of using an inline function ? Explain with an example.
- 23 Compare private, public and protected data.
- 24 Write a program to create a class string. Overload == operator to compare two strings.
- 25 Briefly explain the representation of two dimensional arrays in memory.
- 26 What are the advantages and disadvantages of doubly linked list over singly linked list.
- 27 Sort the given list L = {71, 17, 84, 99, 53, 28} using heap sort. Also write the algorithm.
- 28 Explain the creation of a binary search tree with an example.

(5 × 2 = 10 weights)

IV. Answer any *two* questions :

- 29 What do you mean by a friend function ? Explain with help of an example program, friend functions act as a bridge between two different classes.
- 30 Write a program in C++ to evaluate a postfix expression with an example.
- 31 Write short note on :
 - (a) Virtual functions.
 - (b) Dynamic data structures.
 - (c) Breadth first search traversal.
 - (d) Threaded binary tree.

(2 × 4 = 8 weights)