

## SECOND SEMESTER B.C.A. DEGREE EXAMINATION, APRIL/MAY 2013

(CCSS)

## CA2 B02—PROGRAMMING IN C++ AND DATA STRUCTURES

Time : Three Hours

Maximum : 30 Weightage

Answer all *twelve* questions

- 1 \_\_\_\_\_ is an example of logical operators.
- 2 A \_\_\_\_\_ is a way of grouping objects having similar characteristics.
- 3 The variable which can store the address of a pointer variable itself is called a \_\_\_\_\_
- 4 The \_\_\_\_\_ operator is used to resolve issues with reference to scope of local and global variables.
- 5 A constructor which initializes an object with another object is called a \_\_\_\_\_
- 6 Say True or False Abstract class can be instantiated.
- 7 The term-exception is used to represent a \_\_\_\_\_ error.
- 8 Array is a \_\_\_\_\_ data structure.
- 9 Double ended queue is called a \_\_\_\_\_
- 10 The postfix equivalent of  $a + b * c * (d - e)$  is \_\_\_\_\_
- 11 \_\_\_\_\_ is an example of nonlinear data structure.
- 12 Maximum number of nodes in a binary tree of height  $h$  is \_\_\_\_\_

 $(12 \times \frac{1}{4} = 3 \text{ weightage})$ II. Answer all *nine* questions :

- 13 Differentiate between procedure oriented and object oriented programs.
- 14 What is the purpose of destructors ?
- 15 State any *one* advantage each of function overloading and operator overloading.
- 16 List advantages of templates.
- 17 What is **containership** ?
- 18 Define Array.
- 19 How do you declare a three dimensional array in C++ ?

Turn over

20 Define tree and binary tree.

21 State the advantages of linked stack over array based stack.

(9 x 1 = 9 weigh

III. Answer any *five* questions :

22 With suitable example, explain the terms "encapsulation" and "abstraction".

23 Write a function to convert a binary number to decimal. Write appropriate main function.

24 Write a program for overloading ++ : to find the sum of the digits of an integer.

25 With a suitable examples, explain multiple inheritance and multilevel inheritance.

26 Write and explain quick sort algorithm.

27 Write functions required to implement an array based stack. Write a non-recursive function for finding factorial of a given integer without using any loop constructs (*hint* use stack structure).

28 Write and explain function to insert a new node into a Binary Search Tree.

(5 x 2 = 10 weighta

IV. Answer any *two* questions :

29 (a) With suitable examples, explain different types of constructors.

(b) Write note on argument passing mechanism in C++.

30 (a) Write notes on exception handling.

(b) Write a complete C++ program with necessary functions for the evaluation of postfix expressions.

31 (a) Write a function to delete a node from a doubly linked list.

(b) Write necessary functions and declarations to implement a Queue using linked list.

(2 x 4 = 8 weighta