

2C7110	Roll No. : _____	Total Printed Pages : 2
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M.C.A. (Sem. II) (Main) Examination, July - 2010 C++ and Algorithm and Data Structure (New Scheme)		

Time : 3 Hours]

[Total Marks : 80
[Min. Passing Marks : 32

Attempt **all** questions. Marks of question are indicated against each question.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. _____ Nil _____ 2. _____ Nil _____

1 Answer the following questions in one line :

- What is Polymorphism ?
- List features of object oriented programming.
- How does an array differ from an ordinary variable ?
- Define inheritance.
- What is the time complexity of merge sort algorithms ?
- Which data structure is needed to convert infix notation to postfix notation ?
- How many number of nodes are there in a complete binary tree of depth d ?
- What is an automatic default constructor ?
- What is an inline member function ?
- What do you mean by recursion ?

10×1=10

2 Answer the following questions in not more than 50 words :

- How private and public members make a difference ?
- What are the implicit and explicit arguments in operator overloading ?
- In how many ways parameters can be passed to a function ? Illustrate their difference with examples.

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- Explain static binding. How do virtual functions enable dynamic binding.
- Write an algorithm to count member of nodes in the circular linked list.

5×3=15

3 Answer the following questions in not more than 150 words :

- What are various control structures of C++ ? Explain with examples.
- Write down any four applications of a stack.
- Write an algorithm that counts number of nodes in a linked list.
- Implement a stack using linked list. Show both the PUSH and POP operations.
- Explain the following : (i) Complexity of an Algorithm.
(ii) The space-time trade off algorithm.

5×4=20

4 (a) Define a linked - list. How are these stored in memory ? Suppose the linked list in the memory consisting of numerical values. Write a procedure for each of the following :

- To find the MAX (maximum) of the values in the list.
- To find the average MEAN of the values in the list.

10

(b) Using array to implement the queue structure, write an algorithm / program to

- Insert an element in the queue.
- Delete an element from the queue.

10

5 Write a program in C++ which takes input of a string of characters, reverse it and checks it if this string is palindrom or not ?

15

OR

5 Define any **three** :

- Abstract data type
- Column major ordering for arrays
- Adjacency multilist
- Functions in C++.

15

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