Roll No. .....

67061

M.C.A. (Regular) 2nd Semester Examination-May, 2013

(for Re-appear Candidates w.e.f. May, 2012)

Data Structures

Paper MCA-201

Time : 3 hours *Max. Marks : 80*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after the examination.

Note : Attempt **five** questions in all selecting at least one question from each unit. All questions carry equal marks.

Unit-I

1. (a) What is structured programming ? How is it useful and used ? Discuss with examples. *8*

(b) Discuss uses and advantages of bottom up approach to algorithm design with suitable examples. *8*

2. Explain the following briefly with suitable examples.

(a) Complexity measures of an algorithm *8*

(b) Important considerations for design of an algorithm *8*

Unit-II

3. (a) What is circular queue ? How is it useful and used ? Write C/C++ code segments to apply various operations on it. *8*

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(b) List various applications of Stack and explain any two in detail with relevant C/C++ code segments *8*

4. Describe the following with examples :

(a) Address calculation in an array *4*

(b) Disadvantages of linear queue *4*

(c) D-queue *4*

(d) Sparse matrix *4*

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Unit-III

5. (a) What is doubly linked list ? How is it useful and used ? Write C/C++ code segments to implement insertion of a node at any position. 8

   (b) Discuss uses, advantages and applications of B-trees with an example. 8

6. Explain the following with examples :

   (a) Threaded binary trees and their merits 8

   (b) Binary tree sort and its complexity 8

Unit-IV

7. (a) What is heap sort ? How is it useful and used ? Discuss its complexity and algorithm with C/C++ code segments. 8

   (b) Explain various Hashing algorithms along with their merits and demerits with examples. 8

8. Explain the following with examples :

   (a) Quick sort with C/C++ code segments 8

   (b) Shortest path algorithms 8

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