Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

MCA (2014 Batch) (Sem.–2)

DATA STRUCTURES

Subject Code : MCA-203

M.Code : 26054

Time : 3 Hrs. Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. **SECTIONS-A, B, C & D contains TWO questions each carrying TWENTY marks each and students has to attempt any ONE question from each SECTION.**
2. **SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.**

SECTION-A

1. Define Data structures. What are the operations that-can be performed on data structures?

2. What are stacks? How stacks are represented in memory? Write procedures for PUSH and POP operations.

SECTION-B

3. What are Binary search trees? How they are different from binary trees? Explain insertion of a node in binary search tree with an example.

4. Construct a heap for the list given below. Clearly indicate the changes in each step: 4,2,7,1,6,5,9,3,99,8

SECTION-C

5. Define Graph. What are the various methods of graph traversal? Write algorithms for the traversal methods.

6. Explain Dijkstra's algorithm for shortest distance calculation.

SECTION-D

7. What is searching? Explain the working of linear and binary search algorithms. Also compare their efficiency.

8. What is the basic idea behind radix sort algorithm? What are the applications of this sorting technique? Write the algorithm as well.

SECTION-E

9. Answer the following questions briefly :

a. What is time-space trade off?

b. What is the difference between linear and non-linear data structures?

c. What is an array of pointers? What is its use?

d. What are priority queues? What are its applications?

e. What is the difference between a stack and a queue?

f. What is degree and height of a tree?

g. What are B^+ trees?

h. How graphs are represented using adjacency matrix?

i. Differentiate between Selection sort and Insertion sort.

j. What is the difference between directed and undirected graphs?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.