

Roll No.

Total No. of Questions : 09]

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MCA (Sem. - 3rd)

DATA STRUCTURE

SUBJECT CODE : MCA - 302(N2)

Paper ID : [B0112]

[Note : Please fill subject code and paper ID on OMR]

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Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Attempt any one question from each Sections - A, B, C & D.
- 2) Section-E is **Compulsory**.
- 3) Use of Non-programmable **Scientific Calculator** is allowed.

Section - A

(1 x 10 = 10)

Q1) What are the various operation possible on a Circular link list. Explain with the algorithm?

- Q2)** (a) What are the various operations possible on stacks.
(b) What do the terms LIFO and FIFO means. Explain.

Section - B

(1 x 10 = 10)

Q3) Suppose a binary tree T is in the memory. Write a recursive algorithm or C program which find the number of nodes in T and which finds the depth of T.

Q4) How insertion and deletion is done in a binary search tree? Explain with algorithm.

Section - C

(1 x 10 = 10)

Q5) How minimal spanning tree for a graph is generated? Explain with an algorithm.

Q6) Write short notes on

- (a) Adjacency Matrix.
- (b) Sub Graph and degree of a graph.

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Section - D

(1 x 10 = 10)

Q7) Suppose a sequence of numbers is given like : 5, 1, 6, 7, 9, 22, 10, 55, 45, 34.
How this numbers will be sorted in

- (a) Insertion Sorting.
- (b) Bubble sorting.

Q8) Explain the Radix sort and Heap sort algorithms.

Section - E

(10 x 2 = 20)

- Q9)**
- a) What is a post order traversal?
 - b) What is a top pointer of stack?
 - c) What is an algorithm?
 - d) How binary tree is represented as an doubly link list?
 - e) What is a big O notation?
 - f) What are the pointers of queue?
 - g) What is Garbage collection?
 - h) What is the best and average case of binary search?
 - i) How a binary tree can be represented as link list structure?
 - j) What is traversal method of a threaded binary tree?

