

Roll No.

[illegible]

Total No. of Questions : 09

MCA (2015 & Onwards) (Sem.-2)

DATA STRUCTURES

Subject Code : MCA-203

Paper ID : [72878]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- 1. SECTIONS-A, B, C & D contains TWO questions each carrying TEN 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

- Q1 Write and explain an algorithm to convert infix to postfix expression. Give example to support your answer.
- Q2 Write notes on the following :
- (a) Doubly linked list
 - (b) Priority queues

SECTION-B

- Q3 Define B-Tree. Write and explain an algorithm to insert an element in a B-Tree.
- Q4 What is meant by traversing? Discuss in-order tree traversing algorithm by taking suitable example.

SECTION-C

- Q5 What is graph? Explain how a graph can be represented using adjacency matrix.
- Q6 Write and explain the working of breadth first search algorithm for a graph.

SECTION-D

- Q7 What is insertion sort? Discuss the working principle of insertion sort. Sort the following list of numbers using insertion sort :
4, 212, 376, 12, 52, 115, 35, 6, 98, 62, 34
- Q8 Define BST. Write an algorithm to delete an element from binary search tree.

SECTION-E

Q9 Write briefly :

- (a) What is significance of Big-oh notation?
- (b) What is meant by array of pointers?
- (c) What are different properties of linked list?
- (d) Define dangling pointer.
- (e) What is garbage collection?
- (f) Define degree of a tree. Give example to support your answer.
- (g) Write worst and best case complexity of bubble sort.
- (h) List **any two** merits of hashing.
- (i) List various limitations of HTML.
- (j) Write **any two** applications of heap data structure.