

Roll No.

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BCA (Sem. - 3rd)

DATA STRUCTURES

SUBJECT CODE : BSBC - 302 (2011 & Onward)

Paper ID : [B0229]

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is compulsory.
- 2) Attempt any Four questions from Section - B.

Section - A

Q1)

(10 × 2 = 20)

- a) What is recursion? What are its limitations?
- b) What is doubly linked list? How it is different from singly linked list.
- c) What is queue? List its uses.
- d) Write an algorithm to delete a node from singly linked list.
- e) Write an algorithm to insert an element at kth position of an array.
- f) What is the need of pointers in data structure?
- g) Write the complexity of selection sort, bubble sort and insertion sort algorithms.
- h) List various applications of tree data structure.
- i) What is stack? List its applications.
- j) What is push and pop operation? Explain with example.

Section - B

(4× 10 = 40)

- Q2)** What is algorithm complexity? How it is measured? Discuss the time space trade off by taking suitable example.
- Q3)** Write notes on the following:-
a) Garbage Collection
b) Circular linked list
- Q4)** 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
- Q5)** What is searching? Write and explain an algorithm to search an item from an array using linear search.
- Q6)** What is tree? What are its different types? Explain how tree is represented in memory.
- Q7)** Explain the following:-
a) Binary Search
b) Problem Analysis

