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Roll No. Total No. of Pages: 02

Total No. of Questions: 07

BCA (2011 & Onward) (Sem.-3)

DATA STRUCTURES

Subject Code: BSBC-302

Paper ID : [B0229]

Time: 3 Hrs. Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains SIX questions carrying TEN marks each and students has to attempt any FOUR questions.

SECTION-A

1. Write briefly:

- a) Define Big-O notation
- b) Write down limitations of the array data structure.
- c) Explain the dequeue operation on a queue.
- d) What factors affect the efficiency of an algorithm?
- e) Write a recursive definition for generating a Fibonacci number.
- f) How many nodes does a shortest linked list have? How many nodes does longest linked list has?
- g) How is the height of a tree defined? What is the height of a tree with a node?
- h) What does 'priority' mean in a priority queue?
- i) Write down the best, worst case performance of bubble sort algorithm.
- j) What is the difference between a circular linked list and a circular queue?

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SECTION-B

- 2. Suppose an ordered list is to be searched for finding a number. Write the algorithm along with its best case, average, and worst case performance. (4,6)
- 3. What is a stack? What are its applications in computer science? Write down steps to insert and remove elements from a stack. (2,3,5)
- 4. A linked list does not have to be implemented with pointers only. What is the other implementation of a linked list? Explain. (10)
- 5. What is a binary tree? Discuss the tree traversal approaches? (2,8)
- 6. Write short notes on: (5,5)
 - a) Garbage Collection.
 - b) Recursion.
- 7. Write down the algorithm to sort a list using selection sort. Discuss its complexity. (7,3)

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