Roll No. .....................

Total No. Of Questions: 07]

# BCA,SEM III,2014
## DATA STRUCTURES
### PAPER CODE: BSBC 302

**Time: 03 hours**          **PAPER ID:[B0229]**          Maximum Marks : 60

**Instructions to Candidates:**

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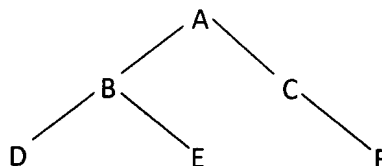
### Section – A

(10 X 2 = 20)

**Q.1)**

  a) Define data structures.
  b) What are doubly linked lists? Explain in brief with diagram.
  c) Describe in brief about the various data structure operations.
  d) What is Big O notation?
  e) What is the difference between row-major and column--major order?
  f) Differentiate between stacks and queues?
  g) Enlist various sorting algorithms?
  h) Define push and pop operations.
  i) What is depth of a tree?
  j) What are priority queues?

### Section -- B

(10 X 4 = 40)

**Q.2 a)**    What is an algorithm? What are its characteristics?

   **b)**    How to find complexity of an algorithm? What is the relation between time and space complexity of an algorithm.

**Q.3**    What are linked lists? How are linked lists stored in memory? Explain various types of linked lists with examples.

**Q.4**    What is selection sort technique? Give algorithm and example in support of your answer.

**Q.5**    What are stacks? How are stacks implemented in memory? What are the various stack operations? Write algorithms for each.

**Q.6**    Differentiate between linear and binary search techniques. Explain with examples. Write an algorithm to perform linear search on a list of N numbers.

**Q.7**    What are binary trees? Enlist various binary tree traversal techniques. Apply these techniques to traverse the following tree:



(10)