

Roll No.

Total No. Of Questions: 07]

MAY 2014

BCA (Semester-2nd)

DATA STRUCTURES

SUBJECT CODE: BC – 204 (N-2)

Time: 03 hours

Maximum Marks : 60

Instructions to Candidates:

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

Section – A

Q.1)

(10 x 2 = 20)

- a) What is an algorithm? State its features.
- b) Define Big O Notation.
- c) Differentiate between LIFO lists and FIFO lists.
- d) What are priority queues?
- e) Define garbage collection.
- f) Define prefix, infix and postfix notations.
- g) What is recursion?
- h) Applications of trees.
- i) Describe various stack operations in brief.
- j) What are the various Binary Tree traversal techniques?

Section – B

(10 x 4 = 40)

- Q.2 a)** What are data structures? Name various data structures and various operations performed on them.
- b)** How to find complexity of an algorithm? What is the relation between time and space complexity of an algorithm.
- Q.3** Define single linked lists. How are they stored in memory? Write an algorithm to insert a node at the beginning of a single linked list.
- Q.4** What is quick sort technique? Give algorithm and example in support of your answer.
- Q.5** What are queues? How are queues implemented in memory? What are the various queue 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 a)** What are binary trees? Enlist and explain in brief about various binary tree traversal techniques.
- b)** A Binary Tree T has 9 nodes:
Inorder: E A C K F H D B G
Preorder: F A E K C D H G B
Draw the tree T and write its post-order traversal.

————— End —————