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 ———————