Roll No_____

MAY 2014

Data Structure through C (BS-108)

BSC(IT) DEC .

Note: Section –A is compulsory. Attempt any four from section B.

M.Marks: 60 **Time: 3 Hours**

Section-A **(2x10=20)**

1) Explain the following:
   a) What do you mean by data structure?
   b) What are the various applications of queue?
   c) Define garbage Collection.
   d) What do you mean by depth, maximum level of tree? Explain with an example
   e) What do you mean by Reverse polish notation?
   f) What are the drawbacks of doubly linked list?
   g) What is the use of header node in a link list?
   h) Why do we need recursion?
   i) Convert the following infix expression into postfix expression:
      Y= (A + B * C – D / E) + E * F . .
   j) What do you mean by sequential search?

Section-B **(10 marks each)**

2. What is complexity of an algorithm? How is it measured? Discuss Time space trade off with an example.

3 a) What are the limitations of arrays? How can you overcome the limitations of arrays

b) Write a Sub Algorithm to find the largest Element in the Array. (4,6)

4. List the various operations possible on singly linked list. Explain with diagrams.

5. Write the algorithm for insertion and deletion in a queue using array.

6. Write the Program in C to sort the numbers using selection sort.

7. Show the steps to insert the following elements into an empty binary search tree.
   50, 34, 32, 45, 12, 67, 62, 80
   Also write the algorithm to insert the elements into binary search tree.

End