

BE (IT) 3rd Semester Examination 2012
Programming and Data Structure –IT 301
Answer any five questions

Time: 3 hours

Marks: 70

1. (a) Write a C program to implement two stack in one array.
(b) What is recursive function? How many type of recursive function are possible?
(c) What are the disadvantages of linear queue? [7+(2+2)+3]
2. (a) Draw comparison trees for Binary search having key values 37, 57, 75, 97, 17, 71 and 7.
(b) Construct a tree by showing all intermediate steps, with its pre-order traversal sequence {11,22,33,44,55,66,77,88} and in-order traversal sequence {88,77,66,55,44,33,22,11}. [7+7]
3. (a) A linked list has nodes having two members, key values and next link. Write a C function to calculate the number of node in a link list.
(b) What is doubly ended queue? Explain with an example. [7+7]
4. (a) State an algorithm for generation of an expression tree and find the expression tree for the following expression: $X = (D-(A+B)*C)$
(b) Explain the heap sort algorithm with a suitable example. [7+7]
5. (a) Write C function for deletion of a node from the binary search tree.
(b) Construct an AVL tree with the following values: 4, 5, 6, 3, 5, 9, 7, 8. [7+7]
6. (a) If the height of a 2-tree is 3, what are (a) the largest and (b) the smallest number of vertices that can be in the tree?
(b) What is a threaded binary tree. Explain with suitable example. [7+7]
7. (a) What disadvantage of insertion sort does Shell sort overcome?
(b) What is the difference between a binary tree and an ordinary tree in which each vertex has at most two branches?
(b) How collision is resolved in Hashing. [3+4+7]
8. Write a sort note: (any two) [7+7]
 - a. Merge sort algorithm.
 - b. Quick sort algorithm.
 - c. Bucket sort.