ST. JOSEPH'S EVENING COLLEGE (AUTONOMOUS)

II SEMESTER BCA EXAMINATIONS – APRIL 2018

DATA STRUCTURES USING C

Duration: 2.5 Hours **Max. Marks: 70**

SECTION – A

I) Answer any SIX of the following questions. (6x3=18)

1. Define data structure. Create a linear array, STUDENT consisting the names of six students. Show how the third element is referenced.
2. What is a stack? Suppose the following six elements are pushed, in order, on to an empty stack:
   AAA, BBB, CCC, DDD, EEE, FFF
   Write the top element of the stack.
3. Translate the given infix expressions into polish notations:
   i). (A + B) * C
   ii). A + (B * C)
   iii). (A + B)/(C-D)
4. Write the steps to traverse a linked list.
5. Explain any 3 file functions.
6. Define binary trees.
7. Specify the procedure used in selection sort.
8. State the drawback of binary search tree.

SECTION – B

II) Answer any FOUR of the following questions. (4x8=32)

9. Explain the classification of data structure.
10. Discuss an application of a stack.
11. a). Explain inserting after a given node in linked list.
    b). Discuss on the various types of linked lists.
12. a). Explain preorder and postorder traversal with example.
    b). Illustrate the balancing of an AVL Search tree through LL and RR rotation during insertion.
13. Write the insertion sort algorithm and explain its process.
14. a). Apply merge sort algorithm to sort the following elements of an array:
    66,33,40,22,55,88,60,11,80,20,50,44,77,30
    b). Explain heap sort.

SECTION – C

III) Answer any TWO of the following questions. (2x10=20)

15. a). Write the procedure for insertion and deletion of an item in a stack.
    b). Write a c program to implement circular queue operations.
16. a). Explain binary search trees.
    b). Explain linked and sequential representation of binary tree.
17. a). Discuss on hash functions.
    b). Sort the following numbers using Bubble sort:
    348, 143, 361, 423, 538, 128,321, 543, 366