Q1) Which data structure represents a waiting line and limits insertions to be made at the back of the data structure and limits removals to be made from the front?

a. Stack   b. Queue.   c. Binary tree.   d. Linked list.

Q2) What kind of linked list begins with a pointer to the first node, and each node contains a pointer to the next node, and the pointer in the last node points back to the first node?

a. Circular, singly-linked list.

b. Circular, doubly-linked list.

c. Singly-linked list.

d. Doubly-linked list.

Q3) What are the disadvantages of arrays?
a) Data structure like queue or stack cannot be implemented
b) There are chances of wastage of memory space if elements inserted in an array are lesser than the allocated size
c) Index value of an array can be negative
d) Elements are sequentially accessed

Q5) What is the value of the postfix expression 6 3 2 4 + − * ?
a) 1
b) 40
c) 74
d) -18

6 * (3 - (2 + 4)) = 6 * (3 − 6) = 6 * -3 = -18

Q6) The prefix form of an infix expression $(p + q) − (r * t)$ is?
a) + pq − *rt
b) − +pqr * t
c) − +pq * rt
d) − + * pqrt

Q7) The prefix form of A-B/ (C * D ^ E) is?
a) -/*^ACBDE
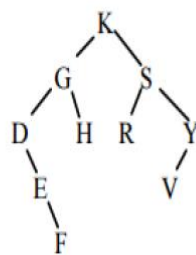b) -ABCD*^DE
c) -A/B*C^DE
d) -A/BC*^DE

Q8)

The integers 7, 1, 12, 8, 3, 0, –1, 9 are inserted in that order into an initially empty binary search tree. Draw the tree after the last insertion. (No explanation is required.)

Soln :

Q9)

Here is a binary tree:

Write the node labels in the order they would be printed in an in-order traversal of the tree. (No explanation is required.)
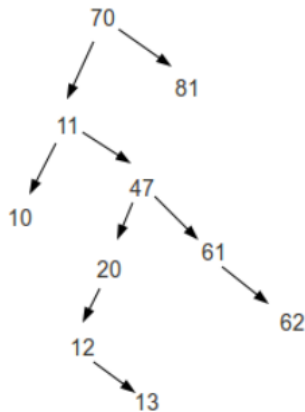
Soln :

LNR

D E F G H K R S V Y

Q10)

Draw the binary search tree that results from inserting the numbers below starting with 70 and ending with 62.

70 11 47 81 20 61 10 12 13 62

a)

Soln :

b)

For the tree above list the nodes in a *preorder* traversal.

NLR

70, 11, 10, 47, 20, 12, 13, 61, 62, 81

c)

For the tree above list the nodes in a *postorder* traversal.

LRN

10, 13, 12, 20, 62, 61, 47, 11, 81, 70

d)

For the tree above list the nodes in an *inorder* traversal.   LNR

10, 12, 12, 13, 20, 47, 61, 62, 70, 81

Q11)

What is the running time of the following code fragment?

```
for(int i=0; i<10; i++)
    for(int j=0; j<N; j++)
        for(int k=N-2; k<N+2; k++)
            cout << i << " " << j << endl;
```

4 k= 2 – 6

K= 3   1 – 5

O(n)

References :

http://www.cs.iit.edu/~iraicu/teaching/EECS211/quiz4-sol.pdf

https://www.sanfoundry.com/data-structure-questions-answers-array-array-operations/

https://www.sanfoundry.com/data-structure-questions-answers-stack-operations/

https://www.sanfoundry.com/data-structure-interview-questions-answers/

http://www.cs.toronto.edu/~hojjat/148s07/tests/PastExams/20051ans.pdf

http://myslu.stlawu.edu/~ehar/Fall11/256/hw/exam2_study_guide_solutions.html

https://courses.cs.washington.edu/courses/cse143/00au/exam_quiz/finalsol.pdf

https://www.geeksforgeeks.org/practice-questions-height-balancedavl-tree/

https://cs.gmu.edu/~kauffman/cs310/13-rotations-avl-trees.pdf

https://condor.depaul.edu/~ichu/csc416/notes/notes6/splayTree.html

https://www.cs.cmu.edu/~tcortina/15-121sp10/Unit06B.pdf