Day: Tuesday	**S-2019-1096**	Time: 11.00 AM TO 02.00 PM
Date: 09/04/2019		Max. Marks: 60

N.B:

    1)   All questions are **COMPULSORY**.
    2)   Figures to the right indicate **FULL** marks.
    3)   Draw neat and labeled diagram **WHEREVER** necessary.

Q.1   Answer **ANY TWO** of the following: **[12]**
    a)   Write a C++ program to elaborate operations of queue.
    b)   Explain linear search algorithm with example.
    c)   Write a C++ program to implementation of singly linked list.

Q.2   Answer **ANY TWO** of the following: **[12]**
    a)   Define Graph. Explain various ways to traverse a graph with suitable example.
    b)   Describe threaded binary tree with proper example.
    c)   Explain selection algorithm in detail.

Q.3   Answer **ANY TWO** of the following: **[12]**
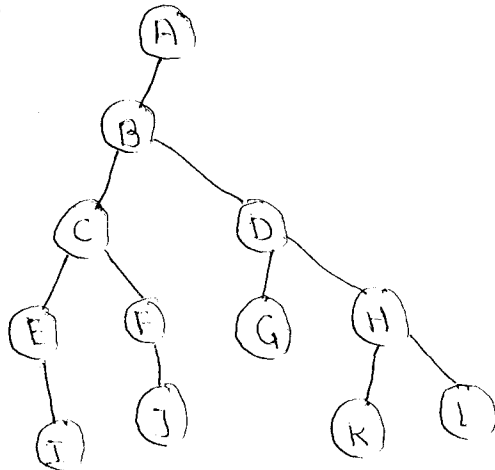   **a)**   Write a C++ program to perform operations on stack.
    b)   Explain Bubble sort with the following data:
            24 58 47 37 12 92 86 33
    c)   Describe shortest path problem.

Q.4   Attempt **ANY THREE** of the following: **[12]**
    a)   Write shell sort with proper example.
    b)   Differentiate between stack and queue.
    c)   Explain circular link list with example.
    d)   What is Big O notation? Explain time complexity and space complexity.

Q.5   Answer **ANY FOUR** of the following: **[12]**
    a)   What is Abstract Data type? Give an example.
    b)   Convert the following infix expression to prefix and postfix forms.
          i)   (A +B) / (C + D * E)   ii) (A + B) * C
    c)   Explain AVL tree.
    d)   Explain following tree terms:
        i) Node   ii) Degree of node   iii) Siblings
    e)   Explain types of graph.
    f)   Consider the following tree and find inorder, pre-order and post-order traversals.

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