Duration: 2 Hrs   **Marks: 60**

Instructions: 1.All Questions are compulsory
             2.Figures to the right indicate marks

Q.1.A.Define the following.   **(5*1=5)**
   a. Stack data structure.
   b. Sorting.
   c. Graph.
   d. Linear Linked List.
   e. Circular queue.

Q.2.B.State whether the following statements are true or false   **(5*1=5)**
   a. An illegal attempt to remove elements from empty queue is called queue overflow.
   b. A data structure is a logical method of representing data in memory.
   c. A node with no children is called a leaf node.
   d. Elements can be added to both ends of a stack.
   e.   Function malloc() is used to deallocate memory.

Q.2.A.Define Strictly Binary tree.   **(2)**
Q.2.B.Write any 2 C Representations for operations on Queues.   **(3)**
Q.2.C.Write a C program to check entered string is a palindrome using stacks.   **(5)**

Q.3.A.Q.2.B.convert the following from infix to prefix and postfix expressions.   **(2)**
    i. ((A+B)*C-(D-E))$(F+G)
    ii. ABC
Q.3.B.Write C implementation for insertafter(p,x) and delafter(p) operations of linked list.   **(3)**
Q.3.C.Write a C program to find minimum and maximum element in a circular list.   **(5)**

Q.4.A.Define degree of a node in graph.   **(2)**
Q.4.B.Explain tree traversal techniques.   **(3)**
Q.4.C.Write a C program to create and display Binary tree.   **(5)**

Q.5.A.what is a general tree?   **(2)**

Q.5.B.Discuss the efficiency of Quick sort.   **(3)**

Q.5.C.write C program for Bubblesort.   **(5)**

Q.6.A.With an example define circular linked list.   **(2)**

Q.6.B.write the steps to convert a forest into a binary tree.   **(3)**

Q.6.C.Write a C program to implement Queue Data structure.   **(5)**

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