



JK Lakshmipat University, Jaipur

Institute of Engineering and Technology

End Term Test, Third Semester 2013-14

B.Tech. Third Semester (Only for CSE)

Course Name: Data Structure Using C

Max marks: 40

Course Code: CSE 301

Time: 11:00-02:00 PM

Name:

Roll No.....

Instructions: - 1. Attempt all sections.

2. In **Section A**, **Two questions of 03 mark each**. Both questions are compulsory.
3. In **Section B**, **Five questions of 07 mark each**. Out of Five, Four questions are to be attempted.

Section A

Q1. Fill In the Blanks

0.5 Marks each

- a) Parent node is also known as node.
- b) If Top = MAX, then stack is
- c) In a binary tree, every node can have maximum..... Successor.
- d) An edge is called a if removing that edge result in a disconnected graph.
- e) In a queue elements are inserted from.....
- f) Balancing Factor -1 Means in AVL tree

Q2. State true or false for the followings:

0.5 Marks each

- a) The size of a graph is the total number of vertices in it.
- b) In BST all the nodes in the left sub tree have a value less than that of the root node.
- c) A linked list is linear collection of data elements.
- d) Prim's algorithm is an example of greedy algorithms.
- e) Pop () is used to add an element on the top of the stack.
- f) If front =max-1 and rear =0, then the circular queue is full.

Section B

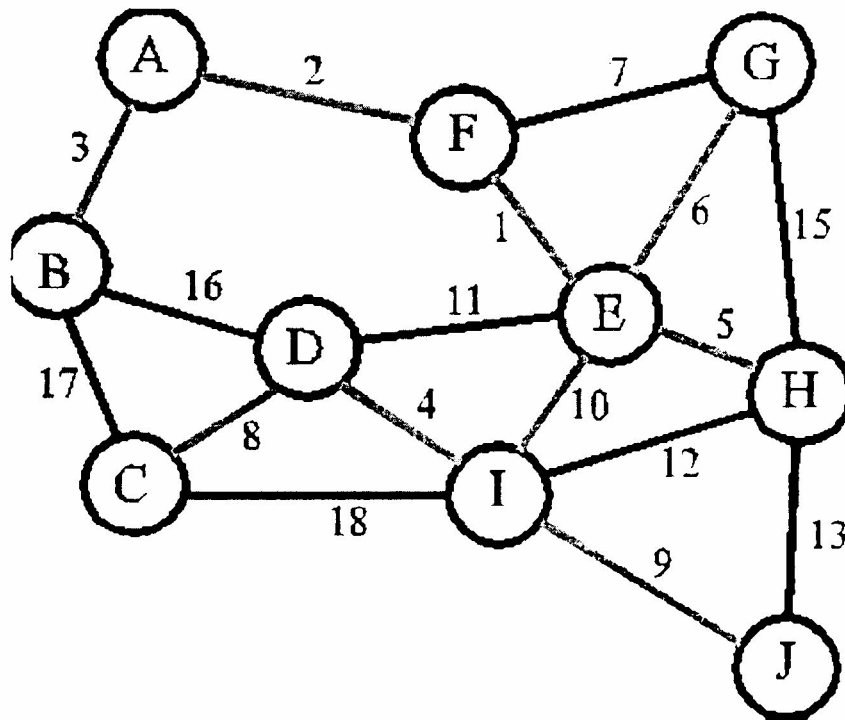
Q3. (a) Sort the following numbers using heap sort:

4 Marks

45, 39, 56, 12, 34, 78, 32, 10, 89, 54, 67, 81

Q3. (b) What is minimum spanning tree? Draw MST for the given graph using Prim's and Kruskal's algorithms?

3 Marks



Q4. (a) Write a C program for Insertion sort and explain with example?

4 Marks

Q4. (b) Write an algorithm to insert a node before a given node in doubly link list and delete first node in circular link list?

3 Marks

Q5. (a) Create AVL tree with the input given below:

4 Marks

45, 63, 72, 70, 39, 36, 54, 27, 18, 81, 29, 15, 19, 25, 26, 1

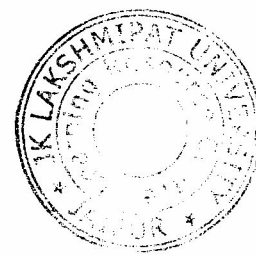
After all insertion delete 63 and 36.

Q5.(b) Create a Binary Search tree with the input given below:

3 Marks

45,39,56,12,34,78,32,10,89,54,67,81

Also find out its In-order, Pre-order and Post-order?



6. (a) The different traversal of the tree is given here:

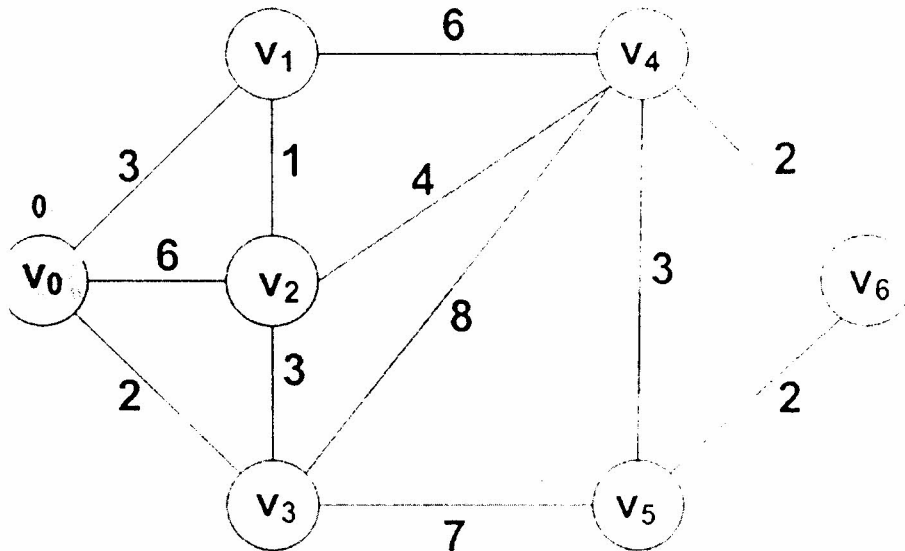
4 Marks

Pre-order:	58	14	6	11	43	76	63	61	63	78
In-order:	6	11	14	43	58	61	63	63	76	78

Construct the tree and find out the post order traversal sequence.

Q6. (b) Apply Dijkstra's algorithm of MST to the given graph?

3 Marks



Q7. (a) Write a C program for Quick Sort?

4 Marks

Q7. (b) Write an algorithm to insert a node before a given node in singly link list and delete after a given node in doubly link list?

3 Marks

Section C

Q8. (a) Transform the following Infix expression to Prefix and postfix using stack method.

3 Marks

$$A + (B * C - (D / E \$ F) * G) * H$$

Q8. (b) What is splay tree? Write various operations performed in Splay tree with example

3 Marks

*****ALL THE BEST*****