

End Semester Examination 2017

B.Tech (CSE) III Semester

Data Structure using 'C' language.

Time: Three Hours

MM: 100

Note:

- (i) This question paper contains five questions.
- (ii) All questions are compulsory.
- (iii) Instructions on how to attempt a question are mentioned against it.
- (iv) Total marks assigned to each question are twenty.

Q1. (Attempt any two questions of choice from a, b and c) (2X10=20 Marks)

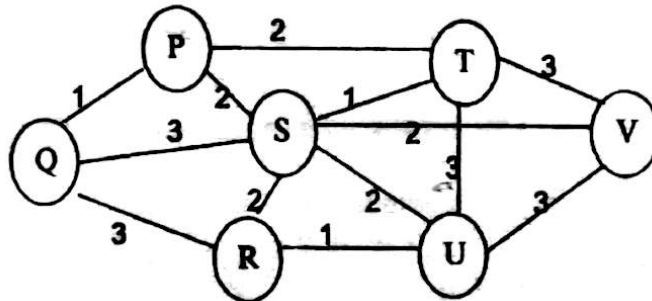
- a. Convert following infix expression to postfix equivalent using stack

$$5 - (3 * 8 / 2) ^ 3$$

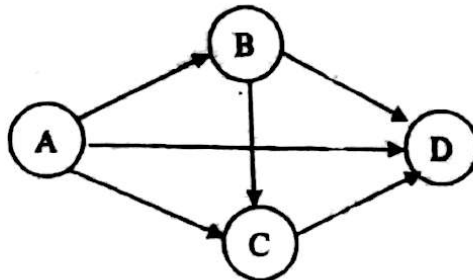
and then evaluate that expression using stack.

- b. Write a function to connect three singly linked lists having pointers p1, p2 and p3. 2nd linked list should be connected after 1st and 3rd list after 2nd.

- c. What do mean by minimum spanning tree. Find minimum spanning tree of the following graph using kruskal's algorithm

**Q2. (Attempt any two questions of choice from a, b and c) (2X10=20 Marks)**

- a. Give memory representation for following graph.



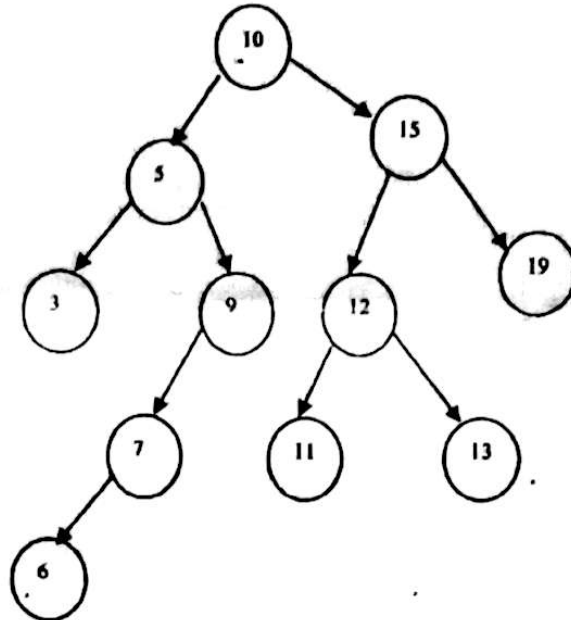
- b. What do mean by AVL tree. Draw AVL tree with following keys

33,14,12,22,61,17,23,2,6,64,70

c. Write a C function to print elements of linked list in reverse order. (Assume that first node of the linked list is pointed by a pointer P).

Q3. (Attempt any two questions of choice from a, b and c) (2X10=20 Marks)

a. What do mean by threaded binary tree. Perform left and right threading on following tree



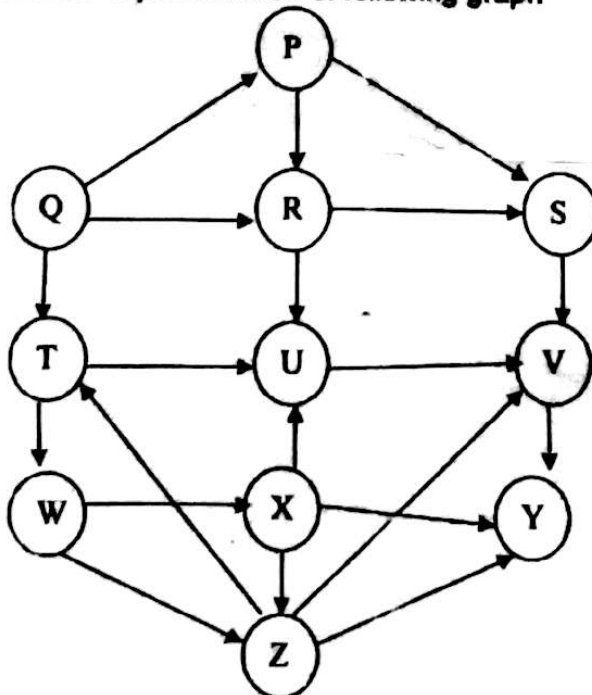
b. Write a C function to sort an array. Also Show the steps of quick sort on the following set of elements:

15, 12, 38, 11, 3, 112, 444, 399, 111.

c. Explain index sequential file organization also explain suitable data structure to implement it.

Q4. (Attempt any two questions of choice from a, b and c) (2X10=20 Marks)

a. Give linked representation of following graph



b. Draw the B-tree of order 3 which is created by inserting the following data arriving in sequence: 4,6,3,10,15,11,2,1,5,20,13,14

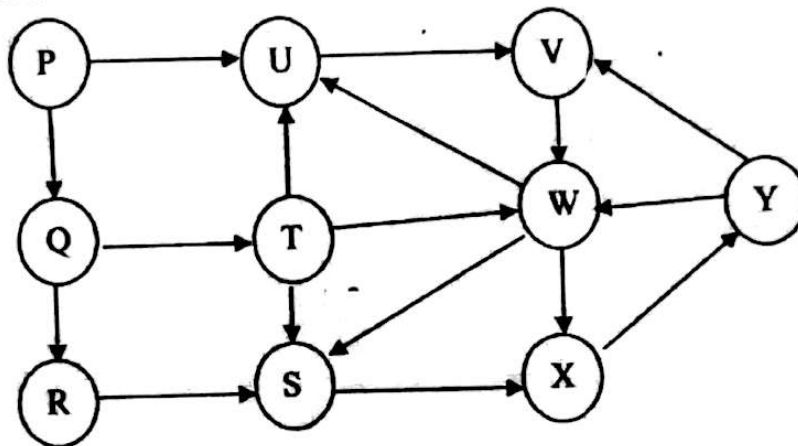
c. Assume that we have two singly linked list having address P1 and P2
Write a 'C' function to create a new Linked List Q that contains elements alternately from P1 and P2 beginning with the first element of P1. If you run out of elements in one of the lists, then append the remaining elements of the other list to Q.

Q5. (Attempt any two questions of choice from a, b and c) (2X10=20 Marks)

a. Write applications of Huffman's algorithm. Using Huffman's algorithm encode following signal.

dddeeecccaaaabcbabcbabebcbcb

b. Apply a traversal technique from a source node P to destination node Y so that in between there are minimum number of nodes.



c.

Write a C function to Create a binary search tree of integers and then write a C function to count all those nodes which has right child only.