Roll No. 2194026 Paper Code: TCS 302

END SEMESTER Examination 2023

B.Tech (CSE) IIISem

Data Structure with 'C' language.

Time : Three Hours Maximum Marks :100

NSTRUCTIONS TO STUDENTS

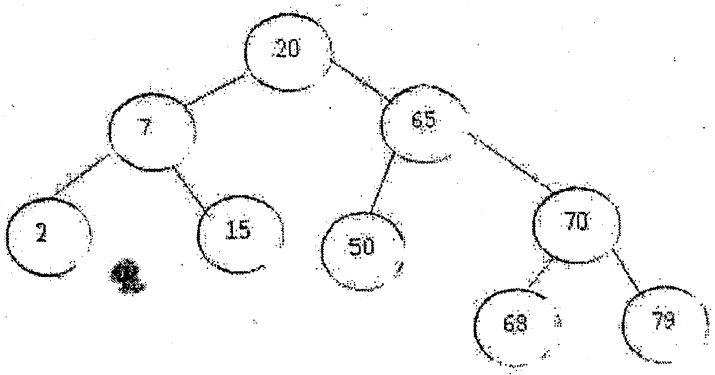
Note:

(i) All questions are compulsory.

(ii) Answer any two sub questions among a, b & c in each main question.

Q1. (2X10=20 Marks)(CO1, CO3,CO5)

A. What do mean by threaded binary tree? Apply right threading on the following tree



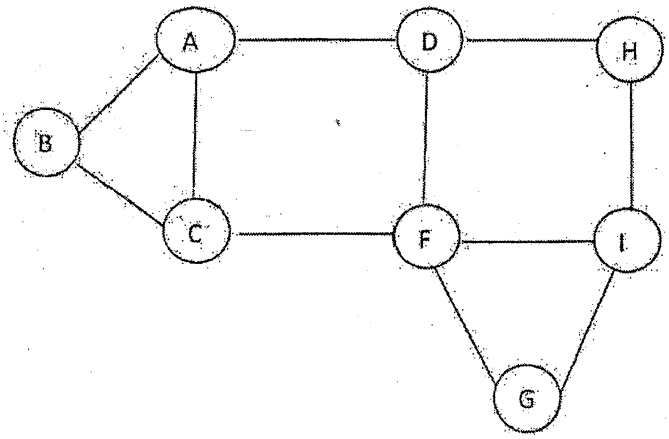
B. *What do you mean by binary search tree? Write a 'C' function to create a binary search tree and then write another C function to count the nodes having left child only.*

C. *Assume that we have a singly linked list with a pointer P, at first node .Write a C function to input a number and search it in the linked list if number is found , update the linked list by deleting that node otherwise print number not found.*

Q2. (2X10=20 Marks)(CO2, CO3,CO4)

A. Explain multi-way search tree. Draw a B - tree of order 3 with following keys:
M,N,A,C,D,P,Q,E,F,R,G

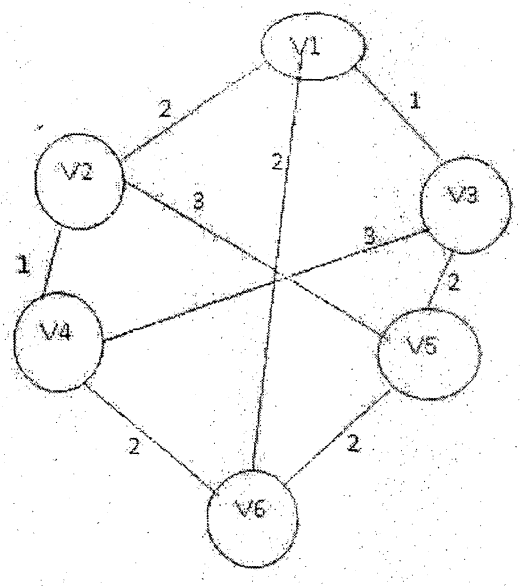
B. Give name and apply the graph traversal technique on the given graph, so that the number of nodes between A to G are minimum.



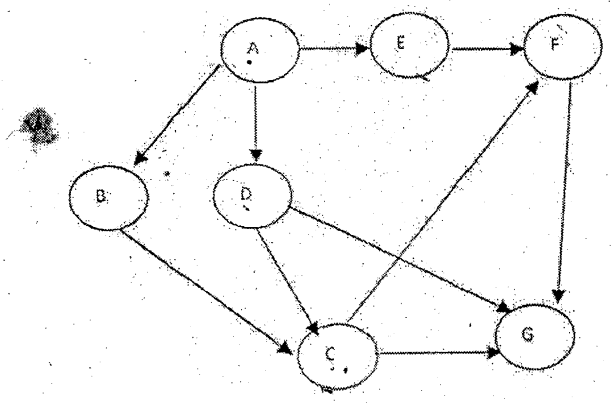
C. *Assume that we have a single linked list, first node of the linked list is pointed by a pointer PTR. Write a C function to delete duplicate nodes in the linked list.*

Q3. (2X10=20 Marks)(CO2, CO4, CO5)

A. *What do you mean by minimal spanning tree? Find minimal spanning tree from the given graph using Kurskal's algorithm (show all steps).*



B. *What do you mean by a connected graph? Give linked representation and memory representation of following graph.*



C. *Explain hash collision with an example. Consider a hash table of size (m) 10. Using linear probing technique insert following keys 22,77,99,12,83,11,92,45 and 211 into the hash table.*

Q4. (2X10=20 Marks)(CO1, CO3,CO5)

A. *Explain sorting and its types. Write a C function to sort the sequences of strings using Selection sort technique.*

B. *Explain sequential file organization and index sequential file organization with examples*

C. *Assume that we have a circular linked. Write a c function to count total number of nodes in the circular linked list.*

Q5. (2X10=20 Marks)(CO2, CO3,CO4)

A. Draw an expression tree using following expression (A-B)*C + (D*E)+(F+G)^H

B. *Write advantages of an AVLtree.Draw an AVL tree with following keys:*

18, 13,10,8,15,17,20,26,25,27,16

C. Using Dijkstra's Algorithm, find the shortest distance from source vertex 'A' to remaining vertices in the following graph