(Following Roll No. to be filled by candidate)

Roll No. 1 4 0 9 2 1 0 0 2 4

B.Tech.
THIRD SEMESTER EXAMINATION 2015-16
ECS302
DATA STRUCTURE USING C

Time: 3 hours **Max Mark: 100**

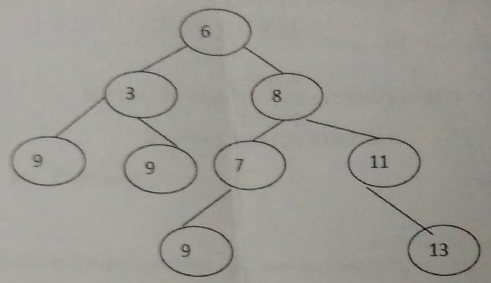
Note

1. Attempt all questions.
2. Marks and number of question to attempt from the section is mentioned before each section.
3. Assume missing data suitably .Illustrate the answer with suitable sketch.

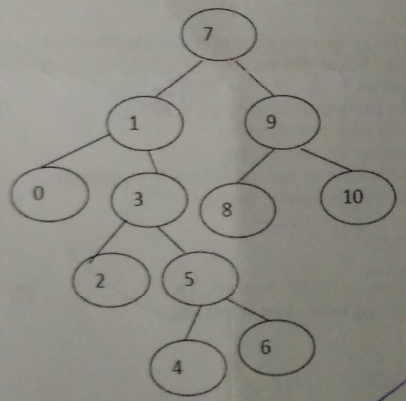
1. Attempt **any four parts** of the following: [4X5]
   a. Write an algorithm to insert an element in circular linked list.
   b. (i) Explain primitive and non primitive data types.
      (ii) Explain abstract data types.
   c. Explain Big o(h) notations.
   d. Write an algorithm to delete an element in a single linked list.
   e. Explain sparse matrix and their types.

2. Attempt **any ~~two~~ parts** of the followings: [2X10]
   a. Explain stack with push ,pop algorithm
   b. Explain tail recursion with an example
   c. Difference between iteration and recursion with an example
   d. Convert the following to postfix notation
      10+3*5/(16-4)
   e. Evaluate 7,8,+,3,2,+,/

3. Attempt **any ~~two~~ parts** of the followings: [2X10]
   a. Convert the following to threaded binary tree



b. Find the preorder, postorder and inorder of the following Binary tree



c. Create an avl tree of the following data:
   2,11,9,6,56,20,23,34
d. Insert 5,3,21,9,1,13,2,7,10,12,4,8 in B tree of order 4
e. Explain Binary search with an example.

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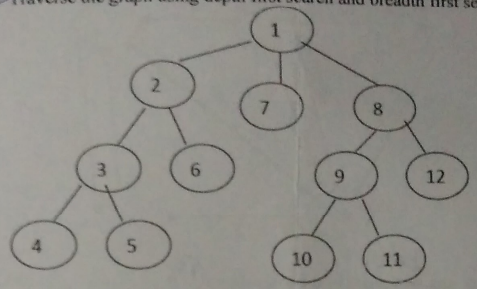
4. Attempt **any four parts** of the followings: [4X5]

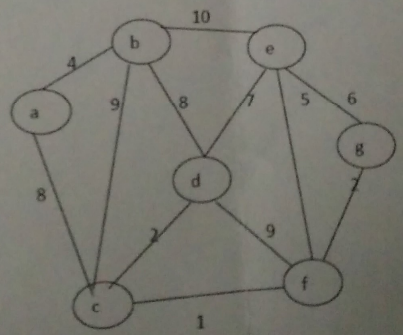
a. Traverse the graph using depth first search and breadth first search



b. Explain spanning Trees and their types?

c. Explain
   i. Adjancy matrix
   ii. Vertices
   iii. Path
   iv. Path Matrix
   v. Edges

d. Find minimum cost using prims algorithm.



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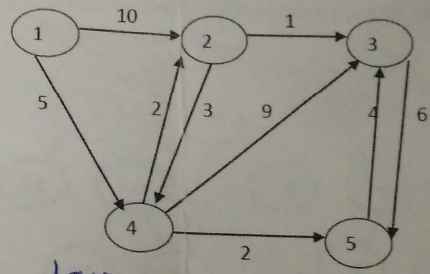
e. Calculate length of shortest path from node1 to every other other node.



5. Attempt **any two parts** of the followings: [2X10]

a. Find an element 45 using binary search algorithm
   13,19,21,31,45,50,61,69,70

b. What is hashing .Explain some of them with an example.

c. Explain collision resolution with an example.

d. Write a short note on
   i) Garbage collection
   ii) Compaction

e. Sort the following data using Quick sort .Explain step by step
   20,11,45,39,12,09,05,17,32