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Paper Code:

TCS 301

15/12/18

1-30-480

End Semester Examination DEC 2018

B.Tech (CSE) III Semester

Data Structure using 'C' language.

Time: Three Hours

MM: 100

Note:

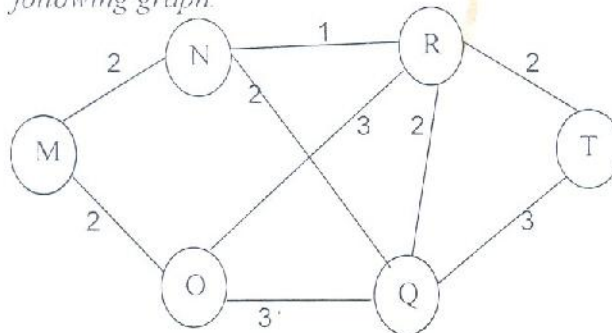
- (i) This question paper contains five questions.
- (ii) All questions are compulsory.
- (iii) Instructions on how to attempt a question are mentioned against it.
- (iv) Total marks assigned to each question are **twenty**.

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

- a. What do you mean by B tree and B+ tree? Construct a B tree of Order 3 with following keys : 16,3,12,15,1,2,4,5,8,9,
- b. What do mean by AVL tree and its balance factors. Draw an AVL tree with following Keys: L,V,A,X,P,Z,W,B,C,Y.
- c. Explain hash collision with an example also explain any two hash collision resolving techniques.

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

- a. Write a C function to sort an array using merge sort technique.
- b. Write an application of minimum spanning tree. Find minimum spanning tree of the following graph.



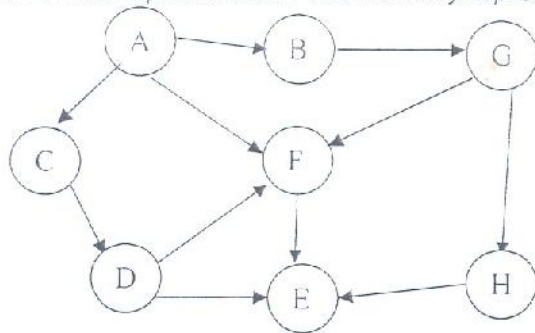
- c. Draw an expression tree from following infix expression:
 $Z = H \% J / K^3 * 6 - C * D^2 + I$

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

- a. Assume that you have a queue implemented with singly linked list concept, write a 'C' function to print that queue in reverse order that is from rear to front.

b. Explain index sequential file organization and relative file organization with examples.

c. Give linked representation and memory representation of following graph.



Q4. (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.

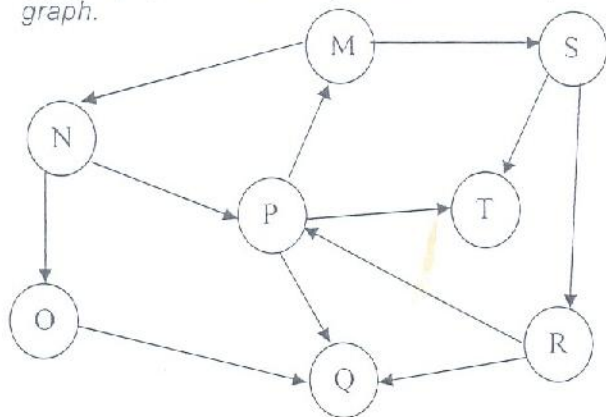
b b d d b b a a c c c a c e d c e d c b b c b c b c

b. Write a 'C' function to create a binary search tree also write a function to count total number of nodes from that binary search tree.

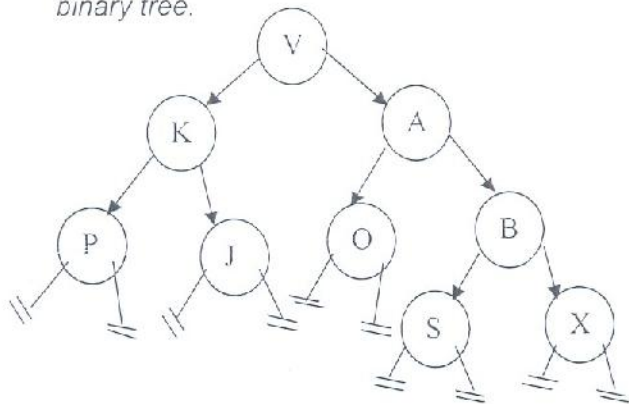
c. Explain garbage collection and compaction with neat and clean diagrams.

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

a. Apply a graph traversal algorithm to find all possible path from node M, on following graph.



b. Write advantage of threaded binary tree. Perform left and right threading on following binary tree.



c. Define hashing also explain various techniques of hashing.