

Total No. of Questions—8]

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[4657]-585

S.E. (Information Technology)
(Second Semester) EXAMINATION, 2014
DATA STRUCTURES AND FILES
(2012 PATTERN)

Time : Two Hours

Maximum Marks : 50

N.B. :— (i) Answer *four* questions in all.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Assume suitable data if necessary.

1. (a) Write a C/C++ function to convert infix expression to postfix expression. [6]
- (b) Define circular queue. Explain the advantage of circular queue over linear queue with example. [6]

Or

2. (a) Clearly indicate the content of stack during evaluation of postfix expression : [6]
- ab-cd/*e+, where a=8, b=6, c=10, d=5 and e=7.

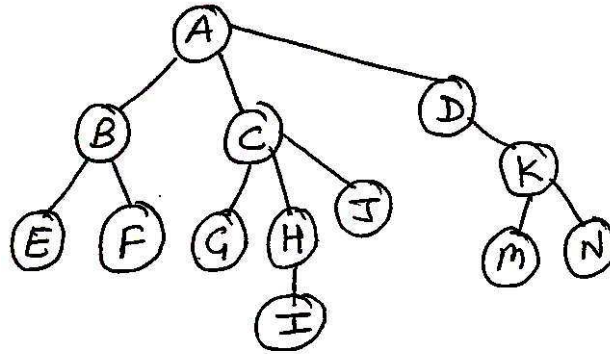
P.T.O.

(b) Define linear queue. How to represent it using linked organization ?

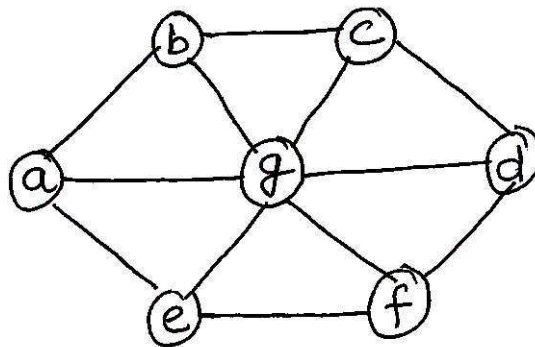
Explain any *one* application in detail. [6]

3. (a) List down the steps to convert general tree to binary tree ?

Convert the given general tree to binary tree— [6]



(b) For the graph given below, find BFS and DFS stepwise. [6]

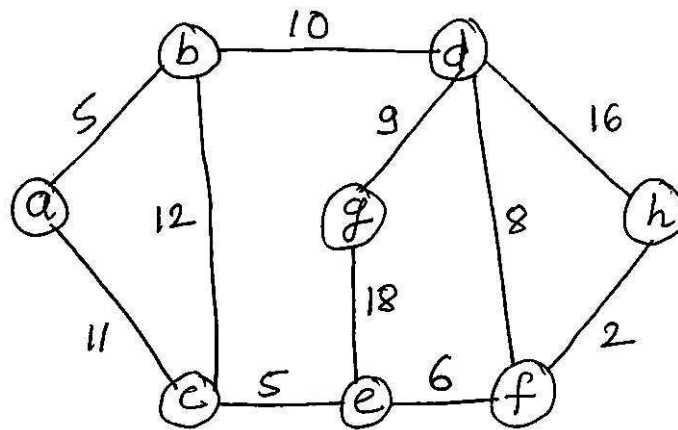


Or

4. (a) Define binary search tree. Draw the BST for given nodes :

38, 14, 56, 23, 82, 8, 45, 70, 18, 15. [4]

- (b) Find the minimum spanning tree using Prim's and Kruskal's method for the following graph : [8]



5. (a) For a given set of values : 9, 45, 13, 59, 12, 75, 88, 11, 105, 46 create a hash table and resolve collision using chaining

with and without replacement ? ($H(x) = x \bmod 10$) [8]

- (b) Write short notes on : [6]

- Red black tree
- Min and max heap.

Or

6. (a) Sort the following number using heap sort and show the sorting stepwise :

44, 66, 33, 88, 77, 55, 22. [6]

- (b) Obtain an AVL tree by inserting one data element at a time in the following sequence :

50, 55, 60, 15, 10, 40, 20, 45, 30, 70, 80.

Label the rotations appropriately at each stage. [8]

7. (a) Compare the feature of sequential file, index file and direct access file. [6]

- (b) Write C++ program to perform the following operations on sequential file : [6]

(a) Create & display records

(b) Insert record.

Or

8. (a) Explain various file opening modes with respect to text and binary files. [6]

- (b) Write C++ program to perform the following operations on direct access file : [6]

(a) Create & display records

(b) Insert record.