Total No. of Questions—**8**] [Total No. of Printed Pages—**4**

Seat No.	

[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.

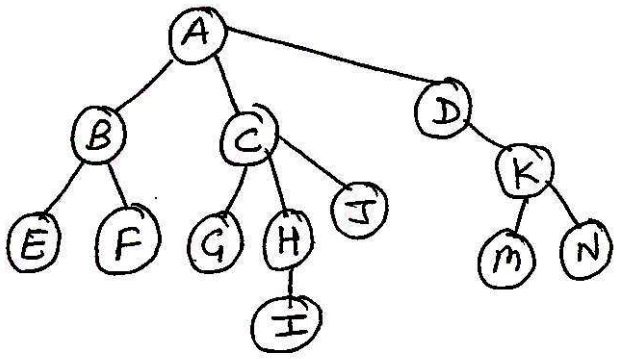
P.T.O.

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

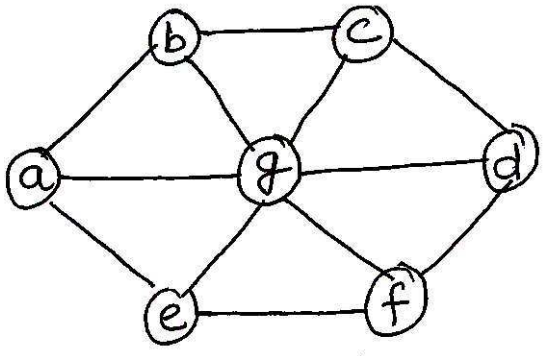
Explain any *one* application in detail. [6]

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

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



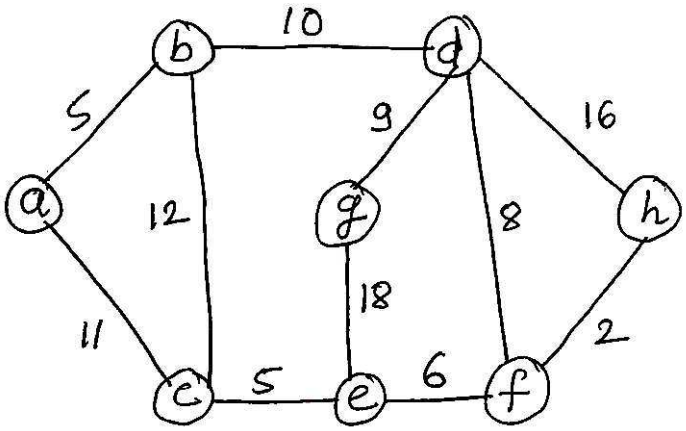
(*b*) For the graph given below, find BFS and DFS stepwise. [6]



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 mod 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.