Registration No. :

Total number of printed pages – 2

First Year Special Examination – 2014

DATA STRUCTURE USING C

BRANCH(S) : AEIE, AUTO, BIOTECH, CHEM, CIVIL, CSE, EC, EEE, ELECTRICAL, ETC, FASHION, IEE, IT, MANUFACT, MECH, MME, TEXTILE

QUESTION CODE : G 651

Full Marks – 70

Time : 3 Hours

Answer Question No. **1** which is compulsory and any **five** from the rest.
The figures in the right-hand margin indicate marks.

1.   Answer the following questions :   2 ×10

   (a)   Define Linked list.

   (b)   What are the applications of stack in computer ?

   (c)   What is a circular queue ?

   (d)   Write the two methods of binary tree implementation ?

   (e)   Define postorder traversal ?

   (f)   Define Hash function.

   (g)   What is a undirected graph ?

   (h)   Write the different ways of representing a graph ?

   (i)   Define a Deque.

   (j)   What do you mean by 2-3 tree ?

2.   Write an algorithm to implement stack using single link list.   10

P.T.O.

3. (a) Explain the memory representation of a 2D-matrix. 5

   (b) Write an algorithm to sort an array of integers in descending order. 5

4. Write an intermediate steps in merge sort of the following :

   15, 2, 42, 4, 9, 72, 90, 5 10

5. (a) Consider a AVL Tree with the following set of data and insert them in the order as they appear :

   8 9 10 2 1 5 6 4 7 11 12 3 5

   (b) Define Hashing. Explain the drawback of closed hashing. 5

6. What is Binary Tree ? Write an algorithm to construct a binary search tree ?

   10

7. (a) Write a procedure to implement Depth First search. 5

   (b) Write an algorithm for preorder traversal of a tree. 5

8. Write and Explain Dijkstra's algorithm for finding shortest path with an example.

   10