Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5152]-162

S.E. (Computer Engineering) (First Semester)

EXAMINATION, 2017

DATA STRUCTURES AND PROBLEM SOLVING

(2012 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Answer Q. No. **1** *or* Q. No. **2**, Q. No. **3** *or* Q. No. **4**, Q. No. **5** *or* Q. No. **6**, Q. No. **7** *or* Q. No. **8**.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

(*iv*) Use of calculator is allowed.

(*v*) Assume suitable data, if necessary.

1. (*a*) Write pseudo C/C++ code for Quick sort. [4]

(*b*) Write the frequency count for the following code : [4]

```
for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
{
c[i][j] = a[i][j] + b[i][j];
}
}
```

(*c*) What is the difference between Binary tree and Binary Search Tree ? Draw binary search tree for the following data : [4]

50, 25, 100, 17, 36, 65, 120, 104

P.T.O.

Or

2. (*a*) Sort the following data using merge soft in ascending order : [4]

14, 33, 27, 12, 37, 20, 42, 44.

(*b*) Write pseudo C/C++ code for inorder, preorder and postorder traversal of binary tree. [4]

(c) What is ADT ? Write ADT for Stack. [4]

3. (*a*) Explain various Graph storage structures. [6]

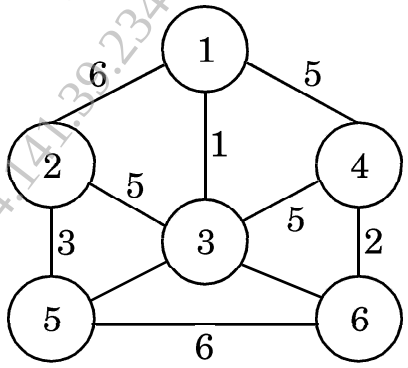
(*b*) Create AVL tree for the following data. Show all the rotations. [6]

9, 27, 50, 15, 2, 21, 36.

Or

4. (*a*) What is collision with respect to Hashing ? Explain various collision resolution techniques. [6]

(*b*) Find Minimun Spanning Tree for the following graph using Prim's algorithm. [4]



(*c*) What are the characteristics of a good hashing function ? [2]

5. (*a*) Construct 5-way binary tree for the following data : [7]

78, 21, 14, 11, 97, 85, 74, 63, 15, 42, 57, 20, 16, 19.

(*b*) Write notes on the following : [6]

(*i*) Sequential File

(*ii*) Random access file.

Or

6. (*a*) Sort the following data in ascending order using heap sort. [6]

15, 19, 10, 7, 17, 16

(*b*) What is a B tree ? Give the structure of its node. [3]

(*c*) What is sequential file ? Explain various operations that can be performed on sequential file. [4]

7. (*a*) Explain various models for parallel computation. [7]

(*b*) Write a parallel algorithm for odd-even merge sort. [6]

Or

8. (*a*) Write a parallel algorithm to perform addition of given numbers using complete binary tree method. [7]

(*b*) With an example explain pointer doubling problem. [6]