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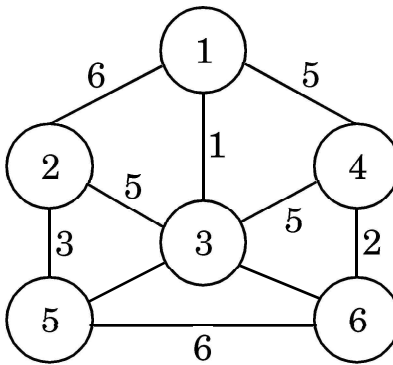
(*c*) What are the characteristics of a good hashing function ? [2]

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]