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[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

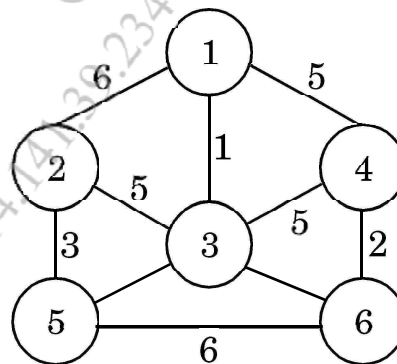
P.T.O.

Or

2. (a) Sort the following data using merge sort 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 Minimum 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]