Reg. No.

Question Paper Code : **51375**

B.E/B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Third Semester

Computer Science and Engineering

CS 2201/CS 33/080230007/10144 CS 302 – DATA STRUCTURES

(Regulations 2008/2010)

(Common to PT CS 2201/10144 CS 302 – Data Structures for B.E. (Part-Time)

Second Semester CSE – Regulations 2009/2010)

Time : Three Hours
Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define Abstract Data Type (ADT) ?

2. What are the applications of lists ?

3. Can you define tree in terms of Graph ? Comment.

4. Give an example for expression tree.

5. What do you mean by splay tree ?

6. Define binary heap.

7. How does the division remainder method help in hashing method ?

8. What is path compression ?

9. How do you represent a graph using linked list ? Give example.

10. What is bi-connectivity ?

PART – B (5 × 16 = 80 Marks)

11. (a) (i) Explain the basic operations of linked list. (10)

       (ii) Describe how to insert an element in circular linked list. (6)

OR

     (b) (i) Write the procedure for stack operations. (8)

       (ii) Explain how to delete an element in a circular queue. (8)

12. (a) (i) Write the procedure for binary tree traversals. (10)

       (ii) Highlight the applications of trees. (6)

OR

     (b) (i) Explain how to implement binary search tree. (10)

       (ii) What is threaded binary tree ? Explain its use. (6)

13. (a) What is AVL tree ? Discuss the procedure for insertion and deletion operations of an AVL tree. Illustrate with examples. (16)

OR

     (b) (i) Explain how to insert an element in B-tree with an example. (10)

       (ii) Enumerate the applications of binary heaps. (6)

14. (a) Given input {4371, 1323, 6173, 4199, 4344, 9679, 1989} and a hash function $h(x) = x \pmod{10}$. Show the resulting

       (a) Open hash table

       (b) Closed hash table using linear probing

       (c) Closed hash table using quadratic probing

OR

     (b) (i) Explain smart union algorithm. (8)

       (ii) What is disjoint set ? Explain its significance. (8)

15. (a) (i) With an example, explain the topological sort algorithm. (10)

       (ii) Compare breadth-first traversal with depth-first traversal. (6)

OR

     (b) (i) Explain the use of Kruskal's algorithm with an illustrative example. (10)

       (ii) Write an algorithm to find the shortest path in a graph. (6)

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