

**L 1054**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

Second Semester

Computer Science and Engineering

CS 1151 — DATA STRUCTURES

(Common to Information Technology and B.E. (Part-Time) R 2005  
First Semester CSE)

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Abstract Data Type (ADT).
2. List out the operations of the list ADT.
3. Define dequeue.
4. Explain the representations of priority queue.
5. Compare the various hashing techniques.
6. List out the steps involved in deleting a node from a binary search tree.
7. Mention the time complexities of merge sort and shell sort.
8. Explain the topological sort.
9. Define NP hard.
10. What is binary heap?

PART B — (5 × 16 = 80 marks)

11. (i) Write algorithms for ADT operations for insert a node to linked list.  
(ii) Write algorithm for delete a node from linked list.
12. (a) Write ADT routines for stack operation. Write routines for evaluating a infix expression.

Or

- (b) (i) Write routines for input restricted dequeue.  
(ii) Write ADT operation for circular queue.
13. (a) Write routines for ADT operation of AVL tree.

Or

- (b) Write algorithm for ADT operation of priority queue.
14. (a) Write heap sort routines. Using above design, sort the following :  
15, 20, 70, 07, 11, 24, 53, 81, 60.

Or

- (b) (i) Write routines for Quick sort.  
(ii) Explain the external sorting.
15. (a) Write algorithm for weighted and unweighted shortest paths. Explain the above algorithms with suitable examples.

Or

- (b) Write and explain the Prim's algorithm and Depth first search algorithm.

Time :

1. W

2. W

3. W

4. W

5. W

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7. H

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