Reg. No. : | | | | | | | | | | | |

T 3164

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008.

Third Semester

(Regulation 2004)

Electronics and Communication Engineering

CS 1151 — DATA STRUCTURES

(Also common to Computer Science and Engineering and Information Technology branches of Annual Pattern Candidates admitted in 2006)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the design approaches available for problem solving?

2. Define data structure.

3. What is ADT? Give an example.

4. What are various types of queues?

5. Define the tree terminology.

6. State the importance of hashing.

7. Define heap sorting.

8. Differentiate between internal and external sorting.

9. State an application of graph data structure.

10. Define Spanning Tree.

PART B — (5 × 16 = 80 marks)

11. (a) Distinguish between top down, bottom up approval for program solving. Discuss the advantages and drawbacks of each. (16)

Or

(b) Write down the need for analysing algorithms. Explain the various asymptotic notations used for algorithm complexity analysis with an example.

12. (a) Describe the different types of linked list with example pseudocodes.

Or

(b) Explain the complete set of stack operations with example.

13. (a) (i) A binary tree has 8 nodes. The inorder and postorder traversal of the tree are given below. Draw the tree and find preorder. (8)

Postorder : F E C H G D B A

Inorder : F C E A B H D G

(ii) Define a binary search tree with an example and how will you balance it? (8)

Or

(b) (i) Describe AVL tree and construct the AVL tree for the following :

10 2 8 12 11 15 7 9

(ii) Write algorithm for inserting an element in AVL tree.

14. (a) Sort the given number by heap sorting method and quick sorting method.

25, 57, 48, 38, 10, 91, 84, 33.

Or

(b) Discuss the shell sort with example. Analyse the same for best and worst cases.

15. (a) Describe the Prim's Algorithm and Kruskal's Algorithm with example.

Or

(b) Describe the Dijkstra's Shortest Path Algorithm with example.