

Code No: 5105D**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****M.Tech I Semester Examinations, August - 2014****ADVANCED DATA STRUCTURES AND ALGORITHMS****(Computer Science)****Time: 3 Hours****Max. Marks: 60****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A**5 × 4 marks = 20**

- 1.a) Define data structure. Explain briefly about linear and non linear data structures.
- b) Write about stacks and queues in java.util.
- c) Mention the usage of HashMap, HashSet, Hashtable of java.util package.
- d) Write about different graph representations.
- e) Define AVL tree and Red-Black tree. Give an example for each.

PART - B**5 × 8 marks = 40**

2. Write a java program to implement linear list ADT.
OR
3. Write an algorithm to implement operations on a circular list.
4. Write an algorithm to convert infix expression to a postfix expression using stack. Execute your algorithm for an example.
OR
5. Write a java program to implement priority queue ADT.
6. Write a program to implement heap sort.
OR
7. Explain the sorting algorithm that is used in the card game. Derive its time complexity.
8. Write Dijkstra's algorithm. Explain with an example.
OR
9. Write a recursive java code for in order tree traversal.
10. Give a comparison on search trees. Explain their applications.
OR
11. Explain about text compression.