

6E3113

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B. Tech. VI Semester (Main/Back) Exam. May/June 2013

ELECTRICAL ENGINEERING # 6EE6

DATA STRUCTURES IN C

Time : 3 Hours

Min. Passing Marks : 24

Maximum Marks : 80

Instruction to Candidates :

Attempt any **five** questions, selecting **one** question from **each** unit. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit-I

1. Write an Algorithm to find largest number in a sorted list. Find its best, average and worst case complexities.

[16]

OR

2. (a) What do you understand by Asymptotic notation of an Algorithm. Explain various asymptotic notations. [8]

- (b) Discuss Advantages and Disadvantages of Link list over Arrays. Also discuss various types of link lists. [8]

Unit-II

3. Define two matrix of identical size and write Algorithm for following operations

- (a) Element by element matrix addition [4]
 (b) Transpose of a matrix [6]
 (c) Matrix Multiplication [6]

OR

5. Derive and Explain formula for calculating the address of any specified member of 2D matrix if matrix is represented in memory as

- (a) Row major mapping [8]
 (b) Column major mapping [8]

Unit-III

5. (a) Discuss any two applications of stack in detail. [8]
 (b) Write and discuss Algorithm for basic operations in stack. [8]

OR

6. Write a C Program to implement a priority Queue using link list. [16]

Unit-IV

7. Write and discuss Algorithm for Pre, post and In-order binary tree traversal. [16]

OR

8. Discuss following tree with the help of suitable example
 (a) AVL Tree [8]
 (b) B=Tree [8]

Unit-V

9. Write short notes on following: [8×2=16]
 (a) Graph Representation Methods
 (b) Minimum Spanning tree

OR

10. Write short notes on following: [4×4=16]
 (a) Heap sort
 (b) Merge sort
 (c) Selection sort
 (d) Insertion sort