3E1496

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B. Tech. (Sem. III) (Main/Back) Examination, January - 2012
Electronics & Communication Engineering
3EC6 Data Structures & Algorithms
(Common for 3EC6, 3EI6 & 3BM6)

Time : 3 Hours] [Total Marks : 80
[Min. Passing Marks : 24

Instructions 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.*

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. Nil 2. Nil

UNIT – I

1 What is complexity of Algorithm ? Explain the various type of Notation's used for time complexity of Algorithm. **16**

OR

1 (a) Write an algorithm to insert an element in ordered linklist. **10**

(b) What is circuler linklist ? What are the advantages of circuler linklist over the singly linklist ? **6**

UNIT – II

2 (a) What do you understand by 2-D array ? How the 2-D array is repersented in memory ? Explain. **10**

(b) Write an algorithm to delete an item from linear array. **6**

OR

2 (a) What are the types of repersentation of sparse matrix in memory ?

10

(b) Write an algorithm to multiply two matrices.

6

UNIT – III

3 (a) Write an algorithm to evalute postfix expression. Explain the each steps to evalute the following postfix expression

P : 5, 3, +, 4, –, 8, 2, /, ^.

12

(b) Write the condition to find the overflow for the circular Queue.

4

OR

3 Explain the push and pop operations over the stack if it is implemented through linklist.

16

UNIT – IV

4 Suppose the following sequences list the nodes of a binary tree T in preorder and inorder respactively.

Preorder: G B Q A C K F P D E R H

inorder : Q B K C F A G P E D H R

Draw the diagram of the tree T. (Explain each step)

16

OR

4 Suppose the fallowing list of numbers is inserted into empty binary search tree. Draw the resulting binary search tree

10, 18, 4, 7, 20, 5, 13, 8, 16, 1, 6, 17

also find the height of binary tree.

16

UNIT – V

5 Write short notes. (any **two**)
(a) Adjacency Matrix.
(b) Minimum spanning tree.
(c) Graph Traversal.

2×8

OR

5 (a) Write an Algorithm to sort the given list of n data items using Bubble sort.

8

(b) Explain the steps to sort the following list of numbers using selection sort.
13, 9, 4, 18, 5, 19, 2, 10.

8
