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5E3256

Roll No. _____ Total No. of Pages : 3

5E3256

B.Tech.V Sem.(Main /Back)Examination Dec. 2012

Computer Science

5CS5.1 Advanced Data Structure

Common for CS & IT

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five question** 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

Q.1. (a) Explain the LLr, LRr, LLb, LRb imbalances in a Red-Black tree with example? (8)

(b) What is dynamic order statistics ? Explain the advantages of splay tree in representation of dictionaries. (8)

OR

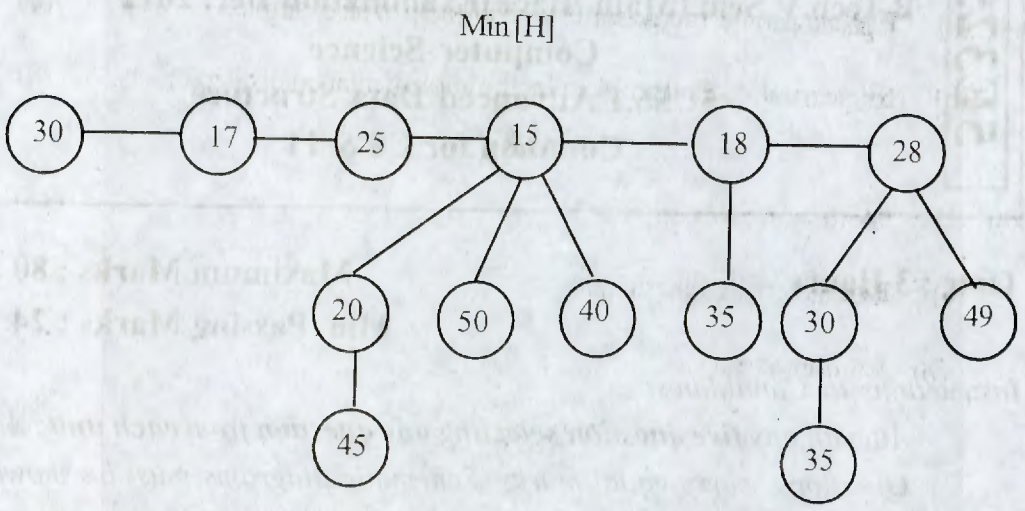
Q.1 (a) Explain briefly the representation of 2-3 trees with example. Explain its insert & delete operations. (8)

(b) Explain Interval trees with the help of example. (8)

UNIT-II

Q.2. (a) Explain the features of "Adjust" algorithm used for adjusting the given sequence into a heap. Also analyse the algorithm. (8)

(b) Perform Extract_min operation in the following Fibonacci Heap. (8)



OR

Q.2. (a) Explain Binominal Heaps & its operation with example. (8)

(b) Write short notes on (any one) (8)

(i) 2-3-4 trees

(ii) Potential function of Fibonacci Heap.

UNIT-III

Q.3. Explain Ford Fulkerson Max flow algorithm with the help of example. (16)

OR

Q.3. Define these terms (any 2) (16)

(a) Isomorphic Components

(b) Connected Components & Articulation point.

(c) Cut vertices

(d) Planer & Dual graph

UNIT-IV

Q.4. (a) Explain parallel merge sorter with the help of an example. (8)

(b) Explain union - find problem for the implementation of disjoint sets. (8)

OR

Q.4. Write short notes on (16)

(a) Bitonic sorter with example

(b) Zero-one principle

UNIT-V

Q.5. (a) Explain Chinese Remainders theorem with the help of example. (8)

(b) Write short notes on (8)

(i) Modular Arithmetic

(ii) Discrete Logarithms Computations.

OR

Q.5. (a) Explain Euclid algorithm with the help of example. Find out GCD (73,31) using extended Euclid algorithm. (10)

(b) Explain Division theorem with the help of an example. (6)
