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Question Paper Code: 51Q01

M.E. DEGREE EXAMINATION, NOV 2018

First Semester

Computer Science and Engineering

15PCS101 -ANALYSIS OF ALGORITHMS AND DATA STRUCTURES

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 1= 5 Marks)

1. Tree of Recursive calls made by the recursive algorithm for the CO1- R
(a) Smothness rule (b) Tower of Hanoi puzzle
(c) Assertive rule (d) None of the above
2. A deap is a double-ended heap that supports the double-ended CO2 -R
priority operations of _____.
(a) Insert (b) Delete-min (c) Delete-max (d) Merge
3. A Simple path from a every node to a descendant leaf contains the CO3- R
same number of _____ nodes.
(a) Black (b) White (c) Red black (d) Black white
4. A _____ is an ordered tree data structure to hold a list of CO4 -R
points.
(a) Segment tree (b) Convex tree (c) Range tree (d) Dimensional array
5. _____ is an imperfect model that will only tangentially CO5- R
relate to the performance on a real parallel machine.
(a) PRAM (b) PRAM ER (c) PRAM CR (d) PRAM WR

PART – B (5 x 3= 15 Marks)

6. Define Recurrence Equation. Name the three efficiency cases. CO1-U
7. Define Deap.Name the functions used by Deap insert property. CO2-U
8. Define Red Black tree with example. CO3-U

9. Define Line Segment Intersection. CO4-U
10. Define Flynn's Classifications. CO5-U

PART – C (5 x 16= 80 Marks)

11. (a) Solve mathematical analysis of Recursive Algorithm using Factorial function $F(n)=n!$. for an arbitrary nonnegative integer n CO1- App (16)
- Or
- (b) Consider the useful property of solving the Asymptotic Notation by the analogous assertions are true for the Ω and Θ notations as well. CO1- App (16)
12. (a) Compute the problem for Min/Max Heap show the result of inserting 10,90,78,25,,20,30,40,62,68,70 and 45,one at a time,into initially empty heap. CO2- App (16)
- Or
- (b) Show the result for delete min and delete max operation for min/max heap ,atleast delete 3 min value and delete 3 max value. CO2- App (16)
13. (a) Construct the AVL tree for the days in a week and check the trees are balanced. CO3-App (16)
- Or
- (b) Construct AVL tree for the months in a year and check the trees are balanced. CO3-App (16)
14. (a) Explain line segment interaction and show briefly about the problem analysis CO4 -U (16)
- Or
- (b) Explain Efficiency measures in Range trees and list out the 1D and 2D Range. CO4 -U (16)
15. (a) Explain Matrix multiplication .Name the Power and Transpose of a matrix CO5-U (16)
- Or
- (b) Explain PRAM and give memory access types of PRAM in detail. CO5-U (16)