

Reg.No. :

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B.E./B.Tech. (Full-Time) DEGREE END SEMESTER EXAMINATIONS
(Nov. / Dec. 2012)
ELECTRICAL AND ELECTRONICS ENGINEERING BRANCH

Fifth Semester
EE 9305 - Data Structures and Algorithms
[Regulation 2008]

Time: 3 Hrs.

Max. Marks: 100

Answer ALL Questions

PART - A [10 x 2 = 20]

1. State any two applications of 'Stack'.
2. What is the disadvantage of using a normal queue?
3. How a level order traversal of a tree is performed?
4. Differentiate between a full binary tree and a complete binary tree.
5. Differentiate between the CALL HEAP which appears in two places in the Heapsort algorithm.
6. Why we select the minimum element and exchange it with the first element in insertion sort?
7. Give the steps involved in divide and conquer methodology.
8. List and explain the purpose of different data structures used in BFS.
9. What is the difference between connected vertices and adjacent vertices?
10. Give the problem statements for SSSP and APSP

PART - B [5 x 16 = 80]

11. Write a detailed note on divide-and-conquer approach and greedy technique in algorithm design with examples. [16]
12. a) i) With a neat flow chart explain the algorithm which converts an infix expression to its postfix form. [8]
ii) Show how the following expression is converted using the same:
 $(A-B) * C + D / (E \wedge F)$. [8]
Or
b) i) How a normal queue is represented using an array? Explain the operations. [5]
ii) What is the problem with this representation? [3]
ii) With diagrams explain the concept and implementation of Circular Queue. [8]
13. a) i) Design an algorithm that compares a random and sorted array and finds average distance traveled by the elements in moving from random to sorted order [10]
ii) Explain Insertion Sort algorithm. [8]
Or
b) i) Explain how Bubble Sort algorithm is modified to count the number of comparison and exchanges made while sorting. [6]
ii) Briefly explain the algorithm to convert an arbitrary array of integers into a heap. Demonstrate the same for the array {5, 3, 7, 27, 9, 11, 14, 2, 8}. [10]
14. a) i) List and explain the different tree traversals available for binary trees. [8]
ii) Draw a complete a full binary tree with 3 levels (including the root), label each node with an alphabet and perform all possible tree traversals in the same using flags. [8]

Or

P.T.O