VAAGDEVI COLLEGE OF ENGINEERING

Autonomous

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Assignment Questions-Design and Analysis of Algorithms

Unit-I

Part-A(Short Answer Questions)

1) What is an Algorithm? Explain the characteristics of an Algorithm.
2) Define Space complexity. Give an example of it.
3) Define time complexity. Give an example of it.
4) Define Set.
5) What are the operations that can be performed on sets?
6) What are the various representations of sets in memory?
7) Define Randomized Algorithm.
8) Write Simple Union Algorithm.
9) What is the drawback of Simple Union Algorithm?
10) Write simple Find Algorithm.
11) Write Weighting Rule.

Part-B(Long Answer Questions)

1) What are asymptotic notations? Explain with example.
2) Describe Pseudo code conventions for algorithm specification.
3) What are the categories of Randomized Algorithms? Explain.
4) How to improve the performance of Simple Union Algorithm? Explain.

(OR)

Explain Weighted Union Algorithm.

(OR)

Explain Simple Union Algorithm with Weighting Rule.

5) Write and explain the Find algorithm with collapsing rule.

(OR)

Write and Explain Collapsing Find Algorithm.

Unit-II

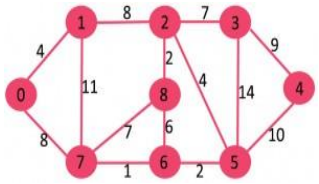
Part-A (Short Answer Questions)

1) Write control abstraction for divide and conquer.

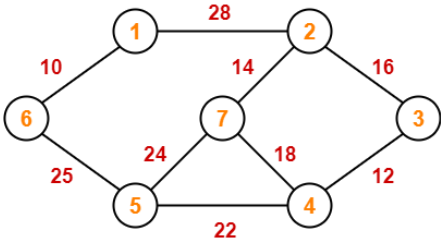
2) Give the recurrence relation for divide and conquer.
3) Give the computing time of binary search that describe best, average and worst cases.
4) What is selection problem?
5) What is Greedy method?
6) What is knapsack problem?
7) What is single source shortest path problem?
8) Define spanning tree. Give example
9) Define minimum spanning tree. Give example.
10) What is job sequencing with deadlines problem?

Part-B(Long Answer Questions)

1) Analyze the time complexity of Binary search.
2) Sort the following elements using Quick sort :26,5,37,1,61,11,59,15,48,19.
3) Derive the recurrence relation for merge sort.
4) Describe Strassen's matrix multiplication.
5) Analyze the time complexity of strassens matrix multiplication.
6) Explain algorithm for Greedy knapsack problem.
7) Write Prim's minimum-cost spanning tree algorithm .Explain with example.
8) Explain minimum spanning tree using kruskal's algorithm.
9) Write and explain Greedy algorithm for sequencing unit time jobs with deadlines and profits.
10) What is the solution generated by the function job sequencing when n=7,(p1,p2,….,p7)=(3,5,20,18,1,6,30), and (d1,d2,…..,d7)=(1,3,4,3,2,1,2)?
11) Find Minimum spanning tree for the graph using Kruskal's Algorithm.



12) Find Minimum spanning tree for the graph using Prim's Algorithm.



13) Write and explain single source shortest path algorithm.

(OR)

Write a Greedy algorithm to generate shortest Paths.