CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III–B.TECH–I–Semester End Examinations (Supply) - June- 2024
DESIGN AND ANALYSIS OF ALGORITHMS
(Common for CSE, IT, CSC, CSD)

[Time: 3 Hours]   [Max. Marks: 70]

Note: This question paper contains two parts A and B.
  Part A is compulsory which carries 20 marks. Answer all questions in Part A.
  Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks.

PART-A   (20 Marks)

1. a) List the asymptotic notations? [2M]
   b) Write the time complexity of merge sort and Quick sort? [2M]
   c) Write algorithm for simple Union & find Operations. [2M]
   d) What is weighting rule? [2M]
   e) What is travelling sales man problem. [2M]
   f) Define principle of optimality? [2M]
   g) What is job sequencing? [2M]
   h) Distinguish between greedy method and dynamic programming. [2M]
   i) What is FIFO Search? [2M]
   j) Compare P and NP. [2M]

PART-B   (50 Marks)

2. Develop general method for Divide and Conquer approach? [10M]

OR

3. Explain in detail about Big-oh notation and Little-oh notation. [10M]

4. Write about Disjoint set, union and Find operation for the following sets s1= {1, 7, 8, 9} [10M]
    s2= {2, 5, 10} s3= {3, 4, 6}.

OR

5. Apply Backtracking technique to solve the following instance of the sum of subsets [10M]
    problem w= {5, 7, 10, 12, 15, 18, 20} & m=35.

6. Explain about optimal binary search trees (OBST) using Dynamic Programming [10M]
    method.

OR

7. Find the optimal solution for the given instance of knapsack problem n=3, knapsack [10M]
    capacity m=20, weight= (18, 15, 10), profits= (25, 24, 15).

8. Explain minimum cost spanning trees with an example. [10M]

OR

9. Write about Job sequencing with deadlines and 0/1 knapsack problem in greedy [10M]
    method.

10. Find out solution for knapsack problem using LC and FIFO Branch and Bound. [10M]

OR

11. Differentiate between NP-Complete and NP-Hard. [10M]

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