Code No.: CS8201PC   R20   H.T.No. [| | 8 | R | | | |]

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–M.TECH–II–Semester End Examinations (Supply) – September- 2023
ADVANCED ALGORITHMS
(CSE)

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

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 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 and may have a, b, c as sub questions.

PART-A   (20 Marks)

1. a)	Define the algorithm and write characteristics.	[2M]
b)	What is space complexity with example?	[2M]
c)	What do you mean by minimum spanning tree?	[2M]
d)	What is maximum matching and maximal matching?	[2M]
e)	What is maximum flow minimum cut?	[2M]
f)	What is divide and conquer algorithms give some examples?	[2M]
g)	What is the statement of Chinese remainder theorem?	[2M]
h)	What is Discrete Fourier Transform properties?	[2M]
i)	What is the simplex method of algorithm?	[2M]
j)	How we can reduce NP-hard to NP-complete?	[2M]

## PART-B   (50 Marks)

2. Define topological sorting algorithm? Write the algorithm and give the suitable example.   [10M]

OR

3. Describe performance analysis, space complexity and time complexity.   [10M]

4. Solve the minimum cost spanning tree of Kruskal algorithm.   [10M]
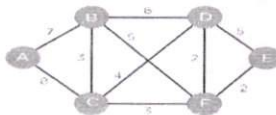
Removing parallel edges or loops from the graph

OR

5. Solve the Edmond's Blossom algorithm to compute augmenting path.   [10M]
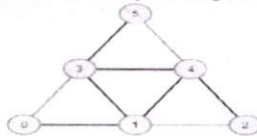
6. How do you prove Maxflow Mincut theorem give the suitable example?   [10M]

OR

7. Describe the inverse of triangular matrix with the suitable example.   [10M]

8. What do you mean by forward and backward approach of problem solving in Dynamic Programming?   [10M]

OR

9. How to solve the Fast Fourier Transform algorithm give the suitable example.   [10M]

10. How to solve a linear programming model using the Simplex method with the suitable example.   [10M]

OR

11. Discuss about cook's theorem.   [10M]

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