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**GIET UNIVERSITY, GUNUPUR – 765022**  
**M. Tech (Second Semester Examinations) – October' 2021**  
**MPCCS2010 – ADVANCE ALGORITHMS**  
**(C.S.E)**

Time: 2 hrs

Maximum: 50 Marks

(The figures in the right hand margin indicate marks)

**PART – A**

Q.1. Answer **ALL** questions

(2 x 10 = 20)

- a. Define asymptotic notations.
- b. Write down the applications of MST.
- c. Exemplify amortized analysis.
- d. Enlists the methods to compute maximum flow.
- e. How simplex method is used as a linear programming approach?
- f. How DFT is different from FFT?
- g. Write down the steps of greedy approaches.
- h. State Chinese remainder theorem.
- i. Differentiate between NP hard and NP complete with example.
- j. Which graph algorithm is used for finding out the shortest path in Dijkstra approach and why it is used?

**PART – B**

(6 x 5 = 30 Marks)

Answer **ANY FIVE** questions

Marks

2. Explain the differences between DFS and BFS. Solve topological sorting problem using DFS algorithm with an example. (6)
3. Explain Edmond's Blossom algorithm to compute augmenting path with an example. (6)
4. Find the optimal parenthesization for the given sequence of matrix  $\langle 30, 15, 5, 10, 20, 25 \rangle$ . (6)
5. Find all solutions of  $x^2 \equiv 1 \pmod{144}$  using Chinese remainder theorem. (6)
6. Write down the algorithm for matrix chain multiplication. How do you analyze its time complexity? (6)
7. How DFT is different from FFT explain with example. (6)
8. Write short notes the following. (6)
  - i. Strassen's Algorithm.
  - ii. max- cut min theorem

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