RM19002001

Registration No:

Total Number of Pages : 1   **M.TECH**
M.TECH 2ND SEMESTER (AR 18) REGULAR EXAMINATIONS, APRIL/MAY 2019
ADVANCED ALGORITHMS
Branch: CSE, Subject Code:MCSPC2010

Time: 3 Hours   **Max Marks : 70**

<div align="center"><u>PART-A</u>   (10 X 2=20 MARKS)</div>

1. **Answer the following questions.**
   a) Enlists the sorting algorithms that can be applied in a graph.
   b) Which graph algorithm is used for finding out the shortest path in Dijkstra approach and why it is used?
   c) Write down the steps of greedy approaches.
   d) Exemplify a strongly connected graph.
   e) How can we characterize a maximum matching algorithm?
   f) Floyed warshall algorithm is an application of Dynamic programming. Justify it.
   g) State Chinese remainder theorm.
   h) Differentiate between NP hard and NP complete with example.
   i) How linear programming is different from dynamic programming?
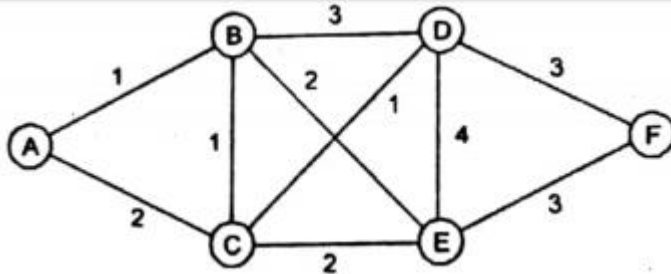   j) Where do we use Fourier transform in algorithm design?

<div align="center"><u>PART-B</u>   (5 X 10=50 MARKS)</div>

Answer any five questions from the following.

2. Find the shortest path from the node a using Dijkstra algorithm   [10]

3. a) How DFT is different from FFT explain with example.   [5]
   b) Explain Edmond's Blossom algorithm to compute augmenting path with an example.   [5]
4. a) Find all solutions of $x^2 \equiv 1$ (mod 144) using Chinese remainder theorem.   [5]
   b)Write Ford-Fulkerson Method algorithm to compute maximum flow with an example   [5]
5. a)State and explain max- cut min theorem.   [5]
   b) Define Chinese remainder theorem. Why it is required in algorithm design?   [5]
6. Use simplex method to maximize the following objective function   [10]
   Z=2X1-X2+2X3
   Subject to the constraints
   $2X_1+X_2<=10$
   $X_1+2X_2-2X_3<=20$
   $X_2+2X_3<=5$
   WHERE $X_1,X_2,X_3>=0$
7. a) Explain point interpolation method with an example.   [5]
   b) Find the optimal parenthesization for the given sequence of matrix <30.35,15,5,10,20,25>   [5]
8. a)Define amortized analysis. What are the different notation we use for it? Describe in brief.   [5]
   b) Explain the approximation algorithm. Is it an application of Dynamic programming   [5]

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