QP Code: RM23MTECH085 Reg. No | | | | | | | | | | | AY 23

# GIET UNIVERSITY, GUNUPUR – 765022

M. Tech (Second Semester) Examinations, May – 2024

## MPCCS2010 – Advance Algorithms

(CSE)

Time: 3 Hrs Maximum: 70 Marks

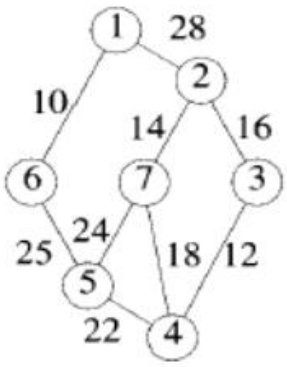
**(The figures in the right hand margin indicate marks.)**

**PART – A** **(2 x 10 = 20 Marks)**

| Q.1. Answer all questions | CO# | Blooms Level |
|---|---|---|
| a. Write short notes on Advanced Number Theoretic Algorithm. | CO1 | K1 |
| b. Write short notes on DFT and FFT. | CO1 | K1 |
| c. Enlist the difference between Big O and Little o notation. | CO1 | K2 |
| d. What are the applications of MST? | CO1 | K1 |
| e. What is the use of Ford-Fulkerson Method? | CO1 | K1 |
| f. How is augmenting path calculated? | CO2 | K2 |
| g. State Chinese remainder theorem. | CO1 | K1 |
| h. Where do we use Flayed Warshall Algorithm? Give an example. | CO2 | K1 |
| i. Exemplify a strongly connected graph. | CO1 | K2 |
| j. State Chinese remainder theorem | CO1 | K2 |

**PART – B** **(10 x 5=50 Marks)**

| Answer ***ANY FIVE*** questions | Marks | CO# | Blooms Level |
|---|---|---|---|
| 2. a. Explain the approximation algorithm. Is it an application of Dynamic programming? | 5 | CO2 | K2 |
| b. Explain the quick sort technique with its algorithm. | 5 | CO2 | K2 |
| 3.a. Define minimum Spanning tree. Give minimum cost spanning tree for the following graph. | 5 | CO3 | K3 |



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|---|---|---|---|---|---|---|---|---|
| b. | Briefly explain Asymptotic Notations. | 5 | CO1 | K1 |
| 4. a. | Explain the cutting Rod problem. Given a table of prices pi determine the maximum revenue $r_n$ obtainable by cutting the rod. | 5 | CO3 | K3 |

| Length | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Price | 0 | 3 | 5 | 10 | 12 | 14 |

| | | | | |
|---|---|---|---|---|
| b. | Recall simplex method and how it helps in linear programming. | 5 | CO2 | K2 |
| 5.a. | What are probabilistic algorithms? Discuss four types with example. | 5 | CO1 | K1 |
| b. | Define master theorem, Solve T(n)= 9T(n/3)+n using the same? | 5 | CO3 | K3 |
| 6. a. | Explain briefly Edmond's Blossom algorithm to compute augmenting path. | 5 | CO1 | K2 |
| b. | Explain Edmond-Karp maximum flow algorithm with an example. | 5 | CO1 | K2 |
| 7.a. | Explain Strassen's Algorithm. | 5 | CO1 | K1 |
| b. | Briefly discuss about Ford Fulkerson method to compute maximum flow problem with an example? | 5 | CO2 | K3 |
| 8. a. | Find the optimal parenthesization for the given sequence of matrix <30,15,5,10,20,25> | 5 | CO3 | K3 |
| b. | Where do we use Fourier transform in algorithm design? | 5 | CO1 | K1 |

--- End of Paper ---