

Code No.: CS8201PC

R20

H.T.No.

		8	R						
--	--	---	---	--	--	--	--	--	--

**CMR ENGINEERING COLLEGE: : HYDERABAD**  
**UGC AUTONOMOUS**  
**I-M.TECH-II-Semester End Examinations (Regular) - September- 2022**  
**ADVANCED ALGORITHMS**  
**(CSE)**

[Time: 3 Hours]

[Max. Marks: 70]

- Note:** 1. Answer any FIVE questions. Each question carries 14 marks.  
2. All questions carry equal marks.  
3. Illustrate your answers with NEAT sketches wherever necessary.

5X14=70

1. a) With the example, explain the shortest path by BFS. [7M]  
b) Discuss the amortized analysis with an example. [7M]
2. a) Can a graph have multiple MST? Justify your answer with one example. [7M]  
b) Discuss the Edmond's blossom algorithm to compute augmenting path. [7M]
3. a) Explain about the time complexity of Strassen's matrix multiplication. [7M]  
b) Discuss the LUP decomposition algorithm with an example. [7M]
4. a) Explain the Chinese remainder theorem. [7M]  
b) Discuss the discrete Fourier transform. [7M]
5. a) Explain the strategy to prove that a problem is NP hard. [7M]  
b) Illustrate the geometry of the feasibility region and simplex algorithm. [7M]
6. a) Explain in detail about Merge sort. Show how it works with the following data set {100,300,150,450,250,350,200,400,500}. [7M]  
b) Define time complexity. Describe different notations used to represent these complexities. [7M]
7. a) Difference between maximal and maximum matching. [7M]  
b) What are the conditions under which an edge cannot belong to MST? Explain. [7M]
8. a) How do you find the inverse of a triangular matrix? Discuss in detail. [7M]  
b) Explain the principle of LU factorization method. [7M]

\*\*\*\*\*

