M.Tech. (CSE)   **(Sem. – 2)**

ADVANCE ALGORITHMS
Subject Code: MTCS-201-18
M Code: 76055
Date of Examination:13-12-2022

Time: 3 Hrs.   **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATES:
1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWELVE marks.**

1. What are the applications of MST? Explain any method to find MST in detail with suitable example.

2. Use recursion tree to determine a good asymptotic upper bound on the recurrence
   a) $T(n) = 9T(n/3) + n$

   b) $T(n) = T(2n/3) + 1$

3. Explain any LUP algorithm in detail.

4. What is a greedy algorithm? What are the properties of these algorithms? Explain the concept of Matroids. Give the solution to the maximal independent set problem.

5. What is the method for number representation? Explain number representation theorem. Discuss the method for number to modulo representation conversion in detail. Explain the application of the method via suitable example.

6. Write an algorithm to find the inverse of a triangular matrix.

7. How FFT works? Explain the FFT algorithm in detail. What are its uses and applications? Explain.

8. Discuss the use of sorting algorithms in solving the latest problems.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.