SECOND SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2021
COMPUTER SCIENCE
FCSS2C06-DESIGN AND ANALYSIS OF ALGORITHMS

Time: 3 Hours   **Maximum Weightage: 30**

Section A: Short answer questions. *All* **questions can be answered. Each carries** *two* **weightage (Ceiling 6 weightage).**

1. Explain the two different properties of sorting algorithms with example.

2. Comment on RAM and PRAM.

3. Give two examples for Geometric problems.

4. Outline the design technique used in Strassen's matrix multiplication.

5. Explain the cost estimation based on key operations.

6. Explain the concept of P vs NP problem.

7. State the time complexity of parallel algorithms.

Section B: Short essay questions. *All* **questions can be answered. Each carries** *four* **weightage (Ceiling 12 weightage).**

8. Describe the steps to develop an algorithm with example.

9. Explain the greedy approach .Discuss how Prim's algorithm and Kruskal's algorithm works.

10. State Masters Theorem. Find out the complexity of Quicksort using Masters Theorem.

11. Explain Big Oh Ratio Theorem, Big Theta Ratio Theorem, Big Omega Ratio Theorem.

12. Explain the importance of algorithm analysis. Illustrate time and space complexity with suitable examples.

13. Prove that if any NP-complete problem is Polynomial time solvable ,then P=NP

14. Briefly explain any one approach for parallel sorting.

Section C: Essay questions. *All* **questions can be answered. Each carries** *six* **weightage (Ceiling 12 weightage).**

15. Explain brute force string matching algorithm with an example.

16. Compare Greedy and Dynamic programming approach with examples.

17. What are recurrence relations? Explain the methods used for solving recurrence relations.

18. Discuss NP completeness problem with example.