

Cluster Innovation Centre, University of Delhi, Delhi-110007

Examination	: End Semester Examination – Nov-Dec 2021
Name of the Course	: B.Tech (Information Technology and Mathematical Innovations)
Name of the Paper	: Design and Analysis of Algorithms
Paper Code	: 32863102
Semester	: III
Duration	: 3 Hours
Maximum Marks	: 75

Instructions:

This question paper contains six questions, out of which any four are to be attempted. Each question carries equal marks.

1. Explain the difference between data structure and algorithms with an example.
2. Explain the properties of the algorithm with examples.
3. Can we prove the correctness of the algorithms? Explain for example the correctness of the insertion sorting method.
4. An array is given with values only 0's, 1's, and 2's. Design an algorithm to sort it in an efficient manner. Explaining its running time cost in different cases.
5. What are algorithmic proof, computational complexity and asymptotic notation and analysis?
6. Explain with examples the divide and conquer algorithm design paradigm with an example of merge sort.