IAE I- QUESTION BANK

Fourth Semester
B.E. Computer Science and Technology

23TSB202 – Analysis of Algorithm

Regulations 2023

Part-A

2 Marks

1. Classify two forms of Analysis of Time Complexity.

2. What are the methods to specify an algorithm.

3. What are the Fundamentals of Algorithmic Problem Solving.

4. Interpret any three Problem types.

5. Explain about Analysis of Algorithm.

6. List the Basic Asymptotic Efficiency Class and its Order.

7. Classify Asymptotic Notations and its functions

8. State various forms of Recurrence Relation.

9. Relate Sorting & Searching that follows Divide and Conquer Method

10. Relate Sorting & Searching with Brute Force Method.

11. Find Notation for $T(n) = T(n/2) + \frac{1}{2}n^2 + n$ using Master Theorem.

12. Find the notation for $T(n) = 2T(n/2) + n \log n$ using Master Theorem.

13. Show an algorithm to subtract the product and sum of an integer with input 'n'=123.

14. Show an algorithm to add two integers in array nums= [3,2,5]; target=7.

15. Show an algorithm to check any number is even or odd.

16. Show an algorithm that performs G.C.D using Euclidean's Algorithm.

Part-B

13 Marks

1. Explain the properties of Asymptotic Notations with Efficiency Classes.

2. Explain Empirical Analysis for Multiplication of 2 Matrices with its Algorithm and Complexities.

3. Interpret Mathematical Analysis of Non-Recursive Algorithm with an example.

4. Show Mathematical Analysis of Factorial problem with Substitution Method.

5. Provide the Recurrence Relation of Fibonacci series for 10 numbers with its Algorithm & Complexities.

6. Infer Bubble Sort using Brute Force Method having input= [70,30,20,40,35] with its Complexities.

7. Relate Selection Sort using Brute Force Method with its algorithm & complexity having input Array= [75,25,55,15,45].

8. Perform Merge Sort with array of inputs= [90,35,10,15,20] with its algorithm & analysis.

Part-C

14Marks

1. Classify the various forms of Asymptotic Notations & its Mathematical Representation.

2. Write about the Analysis Framework in exhaustive manner.

3. Solve the Coin Problem using recursive function with its analysis and algorithm provided inputs; coins [] = {1, 2, 5} & amount= 11;

4. Apply Quick sorting mechanism which exactly divides the given problem into subsets provided input= [90,50,70,15,40,25,10] with the algorithm and analysis.

5. Apply binary searching mechanism and provide its algorithm & complexities with inputs; nums[] = {-1, 0, 3, 5, 10, 12} & target = 5.