Subject: Employability Skills– I (Competitive Coding)

Class: III - I AI & DS

Department: Artificial Intelligence & Data Science

**Unit – I**

1. Explain Arrays & its types with an example program? L1 [CO1] [12M]
2. Explain Strings with an example program? L1 [CO1] [6M]
3. Explain Sting Handling Functions with an example program? L1 [CO1] [12M]
4. Write the algorithms and programs of the different methods to implement Sum of array elements? L1 [CO1] [6M]
5. Write the algorithms and programs of the different methods to implement the reverse of array elements. L1 [CO1] [12M]
6. Find the index of maximum and minimum elements of an array provided that the array contains both positive and negative numbers. L1 [CO1] [12M]
7. Write the program to display the counting frequencies of array elements. L1 [CO1] [6M]
8. Write the algorithm and program to implement an Activity selection algorithm to find the maximum number of activities that can be done and explain it? L1 [CO1] [12M]
9. Write the algorithm and program to implement Kadane’s Algorithm to find the maximum sum of a continuous sub-array and explain it? L1 [CO1] [12M]
10. Write the algorithm and program to implement an Sliding Window Technique? L1 [CO1] [12M]
11. Explain Bit manipulation? L1 [CO1] [12M]

**Unit – II**

1. Write the algorithm and the program to print whether the given number is prime number or not? L2 [CO1] [12M]
2. Write a program to display all the divisors of a number and sum of all divisors of a number? L2 [CO1] [12M]
3. Write the algorithm and the program to print n Prime numbers using Sieve of Eratosthenes? L2 [CO1] [12M]
4. Explain least prime factor of numbers up to N using Sieve? L2 [CO1] [12M]
5. Explain Prime factorization using Sieve? L2 [CO1] [12M]
6. Explain Sum of all factors of a number using Sieve? L2 [CO1] [12M]
7. Write the algorithm and the program to implement Euclidean Algorithm and trace the output. L2 [CO1] [12M]

**Unit – III**

1. Write the algorithm and the program to implement Linear Search? L3 [CO1] [6M]
2. Write the algorithm and the program to implement Binary Search? L3 [CO1] [6M]
3. Write the algorithm and the program to implement Fibonacci search? L3 [CO1] [6M]
4. Write the algorithm and the program to implement Merge Sort? L3 [CO1] [6M]
5. Write the algorithm and the program to implement Quick sort? L3 [CO1] [6M]
6. Write the algorithm and the program to implement Insertion Sort? L3 [CO1] [6M]
7. Write the algorithm and the program to implement Selection sort? L3 [CO1] [6M]
8. Write the algorithm and the program to implement Bubble sort? L3 [CO1] [6M]