

Code: 20ES1103

**I B.Tech - I Semester – Regular / Supplementary Examinations
FEBRUARY - 2023**

**PROBLEM SOLVING TECHNIQUES
(Common for CSE, IT)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Explain the characteristics and applications of computers.	L2	CO1	7 M
	b)	Construct an algorithm to find out the sum of the digits of a given number with an example.	L3	CO2	7 M
OR					
2	a)	Develop an algorithm that reads a list of numbers and makes a count of the number of negatives and the number of non-negative members in the set.	L3	CO2	7 M
	b)	Discover the first n terms of sequence without using multiplication. 1, 2, 4, 8, 16, 32	L4	CO2	7 M

UNIT-II					
3	a)	Develop an algorithm that will find the GCD of n positive non-zero integers.	L3	CO2	7 M
	b)	Outline an algorithm to check whether a given number is prime or not.	L2	CO2	7 M
OR					
4	a)	Construct an algorithm to compute all the prime factors of an integer n.	L3	CO2	7 M
	b)	Apply the linear congruential method to generate random numbers for the given $m = 51$.	L3	CO2	7 M
UNIT-III					
5	a)	Construct an algorithm to rearrange the elements in an array so that they appear in reverse order.	L3	CO3	7 M
	b)	Develop an algorithm to find the number of times the maximum number occurs in an array of n elements.	L3	CO3	7 M
OR					
6	a)	Develop an algorithm to delete from an ordered array, all elements that occur more than k times.	L3	CO4	7 M
	b)	Illustrate an algorithm to find the k^{th} smallest element in a given array of elements.	L2	CO4	7 M
UNIT-IV					
7	a)	Illustrate an algorithm to sort the array of elements using insertion sort.	L2	CO3	7 M

	b)	Apply selection sort to arrange the given set of elements in an ascending order 20, 35, 18, 8, 14, 41, 3, 39	L3	CO4	7 M
OR					
8	a)	Compare linear search and binary search techniques with examples.	L4	CO3	7 M
	b)	Develop an algorithm for merging three arrays.	L3	CO3	7 M
UNIT-V					
9	a)	Illustrate an algorithm to search a pattern from a given text.	L2	CO3	7 M
	b)	Explain about the linear pattern search with an example.	L2	CO3	7 M
OR					
10	a)	Illustrate an algorithm to count the frequency of a pattern in a given text.	L2	CO3	7 M
	b)	Explain about text line editing algorithm with an example.	L3	CO3	7 M