Code: 20CS5401

II B.Tech - II Semester – Regular Examinations – MAY 2023

COMPUTATIONAL THINKING
(MINORS in COMPUTER SCIENCE & ENGINEERING)

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)	Distinguish between all loop statements along with a flowchart and with an example program.	L2	CO1	6 M
	b)	Develop an algorithm for exchanging the values of two variables without using the third variables.	L3	CO2	8 M
		OR			
2	a)	Define Pattern Recognition. Develop an algorithm to find out the factorial of a given number.	L3	CO2	8 M

	b)	Explain the following with an example.
		    i) Data Representation and Abstraction
		    ii) Algorithm Design
			L3	CO2	6 M

		UNIT-II			
3	a)	Construct an algorithm to print prime numbers up to a given number 'n'.	L2	CO1	8 M
	b)	Explain in detail, the sequence of steps to be followed in writing an algorithm for finding the sum of first 'N' natural numbers. **Hint:** Sum of First 'N' natural numbers = $N(N+1) / 2$	L3	CO2	6 M
		OR			
4	a)	Draw a flow chart to find out GCD of three numbers.	L2	CO1	6 M
	b)	Develop an algorithm and draw flowchart for finding the nth number in a Fibonacci sequence.	L3	CO2	8 M
		UNIT-III			
5	a)	Write an algorithm to find out removal of duplicates from an ordered array.	L2	CO1	7 M
	b)	Draw a flow chart to check whether given elements in an array are distinct or not.	L3	CO3	7 M
		OR			
6	a)	Write an algorithm to find out an array order reversal with an example.	L2	CO1	7 M
	b)	Develop an algorithm for finding the maximum number of an array elements.	L3	CO3	7 M
		UNIT-IV			
7	a)	Apply Linear search on {22, 11, 66, 44, 99, 55, 88}.	L4	CO4	8 M

	b)	Devise an algorithm for selection sort and explain with an illustration.	L2	CO1	6 M

OR

8	a)	Illustrate the linear search and binary search algorithms with an example.	L4	CO4	6 M
	b)	Explain insertion sort in detail on {24,12,11,76,39,12,67,34,88,91,26,45,78}.	L4	CO4	8 M

UNIT-V

9	a)	Write a short note on the following. i) Keyword searching in text ii) Text line editing	L2	CO1	8 M
	b)	Use the linear pattern text search algorithm to search for the term FANCY in the text string "FANCIFUL FANNY FRUIT FILLED MY FANCY". i) Show all of the steps and explain each of the required character shifts. ii) How many character comparisons are required to obtain a match?	L4	CO4	6 M

OR

10	Explain the following with an example. i) Linear pattern search ii) Sub linear pattern search	L3	CO3	14 M