SRM Institute of Science and Technology **Set A**

College of Engineering and Technology

School of Computing

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamil Nadu

Academic Year: 2022-23 (Even)

Test: CLA-T1	**Date: 13-02-2023**
Course Code & Title: 18CSC204J Design and Analysis of Algorithms	**Duration:**60 mins
Year & Sem: II Year / IV Sem	**Max. Marks:**25

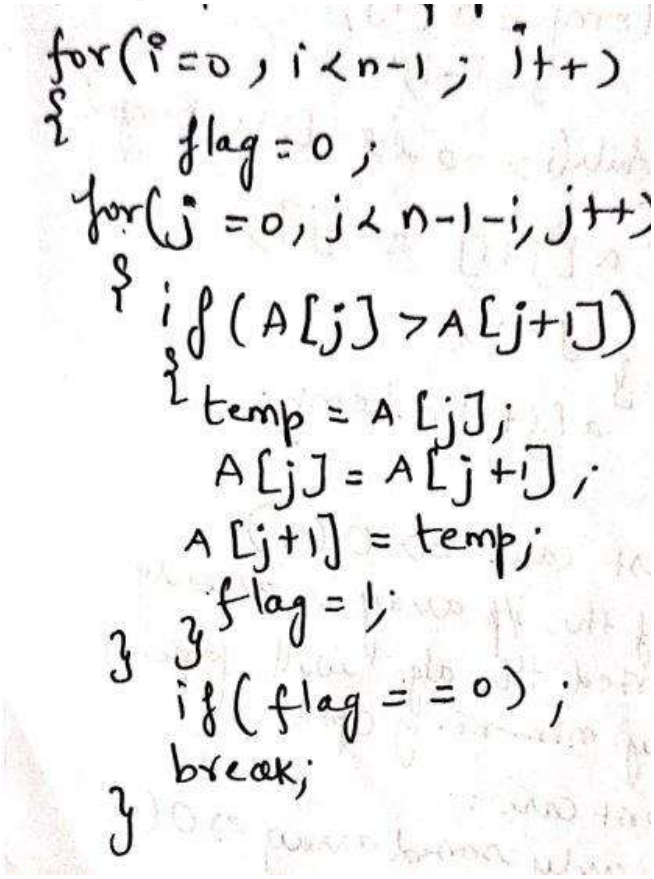
Course Articulation Matrix:

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	-	-	-	-	-	-	-	-	-	-
CO2	-	3	2	-	-	-	-	-	-	-	-	-
CO3	-	3	3	-	-	-	-	-	-	-	-	-
CO4	3	2	3	-	-	-	-	-	-	-	-	-
CO5	2	3	-	-	-	-	-	-	-	-	-	-
CO6	-	2	3	-	-	-	-	-	-	-	-	-

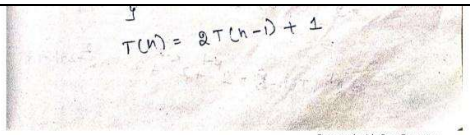
Part – A
(5 x 1 = 5 Marks)

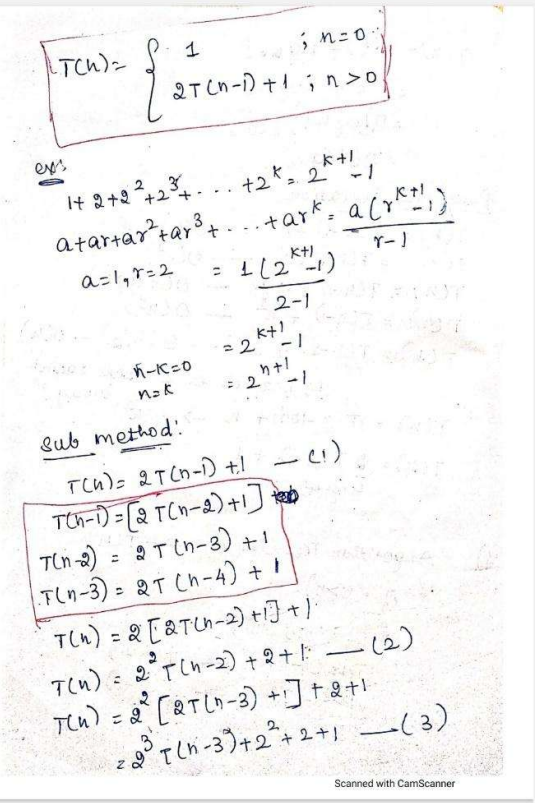
Instructions: Answer all

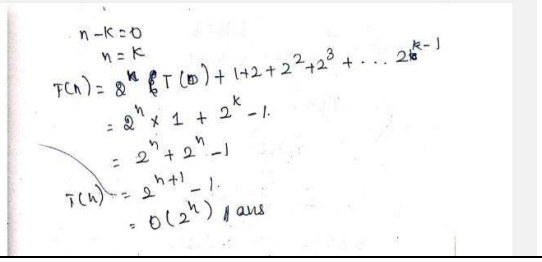
Q. No	Question	Marks	BL	CO	PO	PI Code
1	What is the advantage of recursive approach than an iterative approach? a) Consumes less memory **b) Less code and easy to implement** c) Consumes more memory d) Easy to test and debug during iteration	1	2	1	2	2.1.1
2	Which one is the correct order of increasing growth? a) O(1), O(log n), O(log log n), O((log n)^2) b) O(1), O(log log n), O((log n)^2), O(log n) **c) O(1), O(log log n), O(log n), O((log n)^2)** d) O(1), O(log n), O((log n)^2), O(log log n)	1	2	1	2	2.3.1
3	_____ refers to an algorithm should be a well defined and ordered procedure that consists of a set of instructions in a specific order. **a) Definiteness** b) Correctness c) Finiteness d) Effectiveness	1	1	1	2	2.1.1
4	Problem solving starts from subproblems of the given problem to the global problem is a) Top-down design **b) Bottom-up design** c) Mixed design d) Variable design	1	1	1	2	2.2.2
5	Which of the following type of algorithm use looping constructs specifically for iterating a set of tasks? a) Recursive c) Both a and b	1	2	1	1	1.1.1

	b) **Non-recursive** d) Infinite					
	Part – B (2 x 10 Marks = 20 Marks) Instructions: Answer any 2 Questions					
6	Babu has six different sets of note books. He arranges notebooks by comparing its length **only with his previous note** book **every time**. Suggest the suitable comparison sorting algorithm to Babu.A list of unsorted note books is: 78 23 45 8 32 36. Also find the Best and Worst case of the scenario with its time complexity. **Ans:** Bubble sort pseudocode (5):  Dry run: (3) Sorted: 8 23 32 36 45 78 Time Complexity Analysis: (2) Best case - O(n) Worst case - O(n^2)	10	3	1	2	2.2.3

7	Determine the time complexity by generating a recurrence relation of a given pseudocode.
	fun check(int x)
	{
	if(x>0)
	{
	printf("%d",x);
	check(x-1);
	check(x-1);
	}}
		10	3	1	2	2.3.2



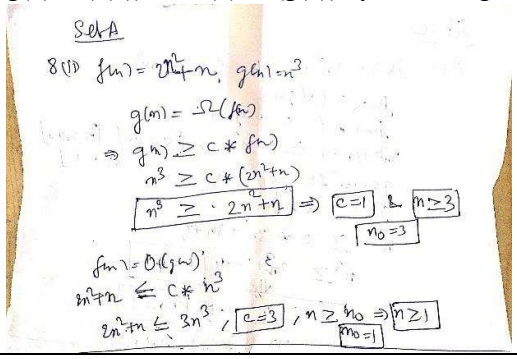




8	(i) Consider the following segment and examine the time complexity using operation count method
	Algorithm p_mat(a, r, c)
	{
	for i:= 1 to r do
	{
	for j:= 1 to c do
	print(a[i][j]);
	print("\n");
	}
	}
		5	3	1	2	2.3.2

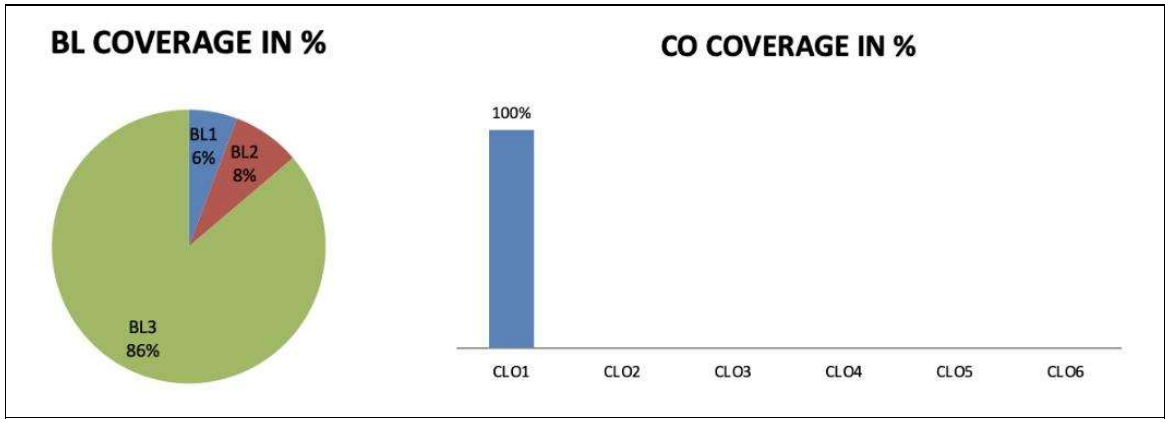
Statement	s/e	Frequency	Total steps
Algorithm print_matrix(a, r, c)	0	0	0
{	0	0	0
for i:= 1 to r do	1	r+1	r + 1
{ for j:= 1 to c do	1	r•(c+1)	rc + r
Print(a[i][j]);	1	r•c	rc
Print("\n");	1	r	r
}	0	0	0
}	0	0	0
Total			2rc+3r+1

		5	3	1	2	2.2.2

	(ii) Given $f(n)=2n^2+n$ and $g(n)=n^3$. Show that $g(n)=\wedge(f(n))$ and $f(n)=O(g(n))$ by exhibiting value of c and n_0 					

***Program Indicators are available separately for Computer Science and Engineering in AICTE examination reforms policy.**

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions



Approved by the Audit Professor/Course Coordinator