AMAL JYOTHI COLLEGE OF ENGINEERING

KANJIRAPPALLY

B.TECH-COMPUTER SCIENCE & ENGINEERING

BTCS2018-22-S6 A & B : CS302-Design and Analysis of Algorithms-Series I

QP Code: CS302/2016/S/7 **Max.Marks :50**

Time: 2 hrs

Q.No	Questions	Marks	CO	BL	PI

1(a)	Write down the recurrence equation corresponding to the following function and solve it using recursion tree method?
	void Test (int n)
	{
	if (n>0)
	{
	for (i=1; i<=n; i=i*2)
	printf ("%d", i);
	Test (n-1);
	}
	}
	}
		10	CO1,CO2	L4,L5	2.1.2,2.1.3

2(a)	Consider the following recursive algorithm for finding the sum of the cubes of first n numbers
	Algorithm Sum (int n)
	{
	If (n=1)
	return 1;
	else
	return Sum(n-1) + n*n*n
	}
	Derive a recurrence relation corresponding to this algorithm and solve it using iteration method?
		10	CO1,CO2	L4,L3	2.4.1

3(a)	Define asymptotic notations used in algorithm analysis?	10	CO1	L2	2.1.3
4(a)	Explain linear, quadratic, logarithmic and exponential time complexities. Write algorithms which falls under each of these categories?	10	CO1	L2, L3, L5	1.4.1
5(a)	Solve the following recurrence equations using iteration method	10	CO2	L3	1.4.1,3.3.1

Q.No	Questions	Marks	CO	BL	PI
	(i) $T(n) = \begin{cases} 1 & n = 1 \\ 2T\left(\frac{n}{2}\right) + n & n > 1 \end{cases}$ (ii) $T(n) = \begin{cases} 1 & n = 1 \\ 3T(n-1) + 1 & n > 1 \end{cases}$				

CO1: Analyze the asymptotic performance of algorithms.

CO2: Solve recurrence equations using Iteration Method, Recurrence Tree Method and Masterâ€™s Theorem.

Bloom's Level wise Marks Distribution

Blooms Taxonomy Level		Percentage
L2	Understanding	40
L3	Applying	60
L4	Analysing	40
L5	Evaluating	40

Course Outcome wise Marks Distribution

COs	Percentage
CO1	80
CO2	60