Total No. of Questions – [3]

Total No. of Printed Pages:2

G.R. No.	

PAPER CODE	U223-235(RE).

MAY 2023 (ENDSEM) EXAM

S.Y. B.TECH (COMPUTER ENGINEERING)

(AY 2022-23 SEMESTER - II)

COURSE NAME: THEORY OF COMPUTATION

COURSE CODE: CSUA22205

(PATTERN 2020)

Time: [1Hr]

[Max. Marks: 30]

Instructions to candidates:

1) **Use of scientific calculator is allowed**
2) **Use suitable data where ever required**
3) **All questions are compulsory**

Question No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Illustrate formal description of PDA with detail transition function?	[4]	[4]	[Understand]
	b) Design PDA to accept language L= $\{ 0^n 1^m \mid n<=m\}$ i)Through empty stack. ii)Through final state.	[6]	[4]	[Apply]
	OR			
	c) Design a PDA for detection of Even palindromes over {a,b}Justify your design with suitable example.	[6]	[4]	[Apply]
Q.2	a) Design a Turing machine that erases all non-blank symbols on tape Where the sequence of non-blank symbols does not contain any blank B in between.	[4]	[5]	[Apply]
	b) Design a Turing machine for well formedness of parenthesis. Justify your design for following pattern (( ) ( )) .	[6]	[5]	[Apply]

	OR			
	c) Design a Turing machine for 2's complement of binary number. Consider suitable example.	**[6]**	[5]	[Apply]
Q.3	a) Compare between tractable and intractable problems with example?	**[4]**	[6]	[Understand]
	b) Show that $L=\{a^n b^n c^n \mid n>=0\}$ is Turing Decidable.	**[6]**	[6]	[Apply]
	OR			
	c)If L1, L2 are 2 are 2 recursive languages and if L is defined as L={w|w is in L1 not in L2 ,or w is in L2 not in L1 } Prove or disprove that L is recursive.	**[6]**	[6]	[Apply]