SR 22

SET-1

St. Peter's Engineering College (Autonomous) Dullapally (P), Medchal, Hyderabad – 500100. I - Mid Term Examination- March 2024						Dept.	:	CSE (AIML)
						Academic Year 2024-25		
Subject Code	:	AS22-66PC02	Subject	:	AUTOMATA THEORY & COMPILER DESIGN			
Class/Section	:	B. Tech. (A)	Year	:	II	Semester	:	II
Duration	:	120 Min	Max. Marks	:	30	Date:	:	

BLOOMS LEVEL					
Remember	L1	Understand	L2	Apply	L3
Analyze	L4	Evaluate	L5	Create	L6

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PART – A (10x1M = 10M)

Note: Answer all Questions. Each Question carries equal marks.

Q. No	Question (s)	Marks	BL	CO
	UNIT – I			
1	a) Define Finite Automata.	1M	L1	C222.1
	b) Define Transition Function in FA.	1M	L1	C222.1
	c) Define Computation.	1M	L1	C222.1
	d) Define NFA-Ɛ.	1M	L1	C222.1
	UNIT – II			
	e) Define Identity Rules for Regular Expressions.	1M	L1	C222.1
	f) Define Regular sets.	1M	L1	C222.1
	g) Define Derivation Tree.	1M	L1	C222.2
	h) Define Context Free Language.	1M	L1	C222.2
	UNIT – III			
	i) Define Push Down Automata (PDA).	1M	L1	C222.2
	j) Define Empty Symbol in Stack in the perspective of PDA.	1M	L1	C222.2

PART – B (20M)

Q. No	Question (s)	Marks	BL	CO

UNIT – I				
2	a) Design a DFA which accepts set of all strings containing 1100 as a substring with in an alphabet ∑ = {0, 1}.	**4M**	L6	C222.1
	b) Design a DFA with Dead States.	**4M**	L6	C222.1
OR				
3	a) Design an NFA which accepts strings which ends with 00|11 within an alphabet ∑ = {0, 1}.	**4M**	L6	C222.1
	b) Design an NFA which accepts strings with 1100 or 1010 as a substring with in an alphabet ∑ = {0, 1}.	**4M**	L6	C222.1
UNIT – II				
4	a) State and Prove Arden's Theorem.	**4M**	L5	C222.1
	b) Construct an NFA and NFA-Ɛ for the regular expression 11+00.	**4M**	L6	C222.1
OR				
5	a) Discuss about regular grammar, right linear grammar and left linear with examples?	**4M**	L2	C222.1
	b) Draw a Parse Tree for the Language L={$a^n b^n$, n>=0} and the CFG with Productions are S-> aSb, S-> Ɛ.	**4M**	L6	C222.1
UNIT – III				
6	Design a PDA for Language L = {WCW^r | W ∈ (a + b)*}.	**4M**	L4	C222.2
OR				
7	Explain about Instantaneous Description of PDA.	**4M**	L4	C222.2

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BLOOMS LEVEL					
Remember	L1	Understand	L2	Apply	L3
Analyze	L4	Evaluate	L5	Create	L6

*****

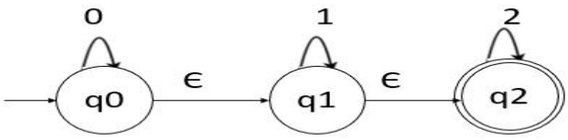
PART – A (10x1M = 10M)

Note: Answer all Questions. Each Question carries equal marks.

Q. No	Question (s)	Marks	BL	CO
	UNIT – I			
1	**a)** Define Deterministic Finite Automata.	1M	L1	C222.1
	b) Define Alphabet.	1M	L1	C222.1
	c) Define String.	1M	L1	C222.1
	d) Define Theory of Computation.	1M	L1	C222.1
	UNIT – II			
	e) Define Regular Expression.	1M	L1	C222.1
	f) Define Empty Set.	1M	L1	C222.1
	g) Define Parse Tree.	1M	L1	C222.2
	h) Define Ambiguous Grammars.	1M	L1	C222.2
	UNIT – III			
	i) Define Instantaneous Description of PDA.	1M	L1	C222.2
	j) Define NOOP operation in PDA.	1M	L1	C222.2

PART – B (20M)

Q. No	Question (s)	Marks	BL	CO
	UNIT – I			
2	a) Design a DFA which accepts set of all strings containing even number 0's and 1's within an alphabet $\sum = \{0, 1\}$.	4M	L6	C222.1
	b) Design an DFA which accepts strings which ends with 00|11 within an alphabet $\sum = \{0, 1\}$.	4M	L6	C222.1
	OR			

3	Convert the following NFA-Ɛ in to NFA,  	**8M**	L5	C222.1
	UNIT – II			
4	a) Construct an NFA-Ɛ for the regular expression 110(0+1)*.	**4M**	L6	C222.1
	b) Construct an NFA-Ɛ for the regular expression (0+1)*11.	**4M**	L6	C222.1
	OR			
5	a) Explain in detail about Parse Trees, Left and Right Most Derivations.	**4M**	L4	C222.2
	b) Draw a Parse Tree for the Language L={$a^n b^{2n}$, n>=0} and the CFG with Productions are S-> aSbb, S-> Ɛ.	**4M**	L6	C222.2
	UNIT – III			
6	Design a PDA for the Language L = {$a^n b^{2n}$| n>0}.	**4M**	L4	C222.2
	OR			
7	Explain in detail about Universal Turing Machine.	**4M**	L4	C222.2

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SET-3

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Subject Code	:	AS22-66PC02	Subject	:	AUTOMATA THEORY & COMPILER DESIGN			
Class/Section	:	B. Tech. (A)	Year	:	II	Semester	:	II
Duration	:	120 Min	Max. Marks	:	30	Date:	:	

BLOOMS LEVEL					
Remember	L1	Understand	L2	Apply	L3
Analyze	L4	Evaluate	L5	Create	L6

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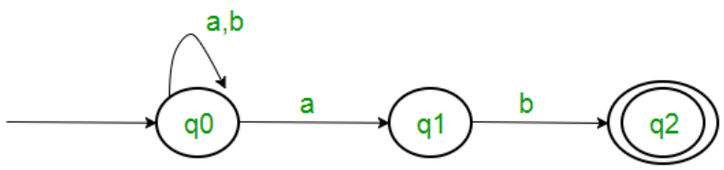
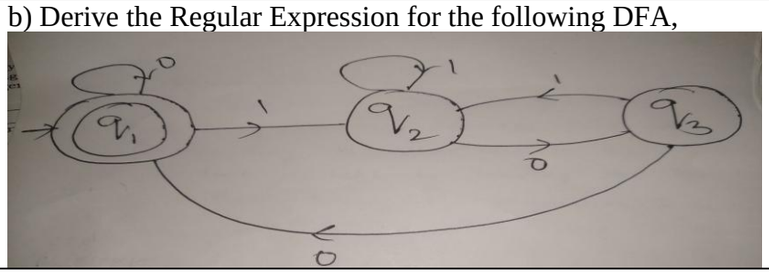
PART – A (10x1M = 10M)

Note: Answer all Questions. Each Question carries equal marks.

Q. No	Question (s)	Marks	BL	CO
	UNIT – I			
1	**a)** Define Non-Deterministic Finite Automata.	**1M**	L1	C222.1
	b) Define an Automata Problem.	**1M**	L1	C222.1
	c) Define Dead State in FA.	**1M**	L1	C222.1
	d) Define Language.	**1M**	L1	C222.1
	UNIT – II			
	e) Define Null String.	**1M**	L1	C222.1
	f) Define Regular Language.	**1M**	L1	C222.1
	g) Define Arden's Equation.	**1M**	L1	C222.1
	h) Define Context Free Grammar.	**1M**	L1	C222.2
	UNIT – III			
	i) Define Γ in PDA.	**1M**	L2	C222.2
	j) Define Instantaneous Description of Turing Machine.	**1M**	L1	C222.2

PART – B (20M)

Q. No	Question (s)	Marks	BL	CO
	UNIT – I			
2	a) Design a DFA which accepts set of all strings that starts with 1 and ends with 0 within an alphabet ∑ = {0, 1}.	**4M**	L6	C222.1
	b) Design an NFA with Dead States.	**4M**	L6	C222.1
	OR			
3	Convert the following NFA in to DFA, 	**8M**	L5	C222.1
	UNIT – II			
4	a) Construct a DFA, NFA and NFA-Ɛ for any regular expression.	**4M**	L2	C222.1
	b) Derive the Regular Expression for the following DFA, 	**4M**	L2	C222.1
	OR			
5	State and Prove Pumping Lemma.	**8M**	L5	C222.1
	UNIT – III			
6	Design a PDA for the Language L = {WW^r | W ∈ (a,b)*}.	**4M**	L4	C222.2
	OR			
7	Explain about Turing Machine as an Adder.	**4M**	L4	C222.2

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