SR 22

St. Peter's Engineering College (Autonomous) Dullapally (P), Medchal, Hyderabad – 500100. QUESTION BANK							Dept.	:	CSE(AIML)
							Academic Year 2024-25		
Subject Code	:	AS22-66PC02	Subject	:	AUTOMATA THEORY & COMPILER DESIGN				
Class/Section	:	B. Tech.	Year	:	II	Semester	:	II	

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

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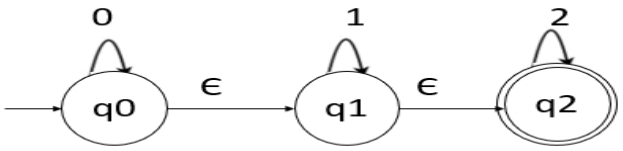
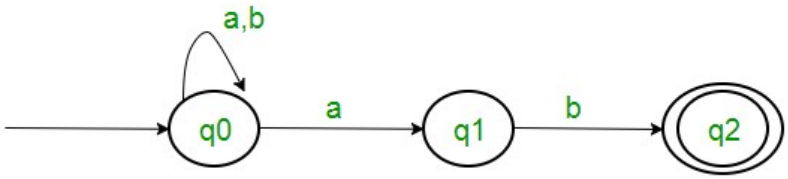
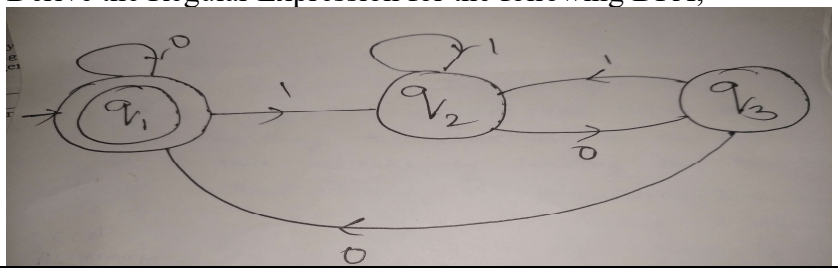
Q. No	Question (s)	Marks	BL	CO
	UNIT – I			
1	Define Finite Automata.	1M	L1	C222.1
	Define Transition Function in FA.	1M	L1	C222.1
	Define Computation.	1M	L1	C222.1
	Define NFA-Ɛ.	1M	L1	C222.1
	Define Theory of Computation.	1M	L1	C222.1
2	Discuss about DFA with example.	3M	L2	C222.1
	Discuss about NFA with example.	3M	L2	C222.1
	Design a DFA with Dead States.	3M	L6	C222.1
	Design a NFA with Dead States.	3M	L6	C222.1
	Design a NFA-Ɛ with example.	3M	L6	C222.1
3	Design a DFA which accepts set of all strings containing 1100 as a substring with in an alphabet $\sum = \{0, 1\}$.	5M	L6	C222.1
	Design an NFA which accepts strings which ends with 00|11 within an alphabet $\sum = \{0, 1\}$.	5M	L6	C222.1
	Design an NFA which accepts strings with 1100 or 1010 as a substring with in an alphabet $\sum = \{0, 1\}$.	5M	L6	C222.1
	Design a DFA which accepts set of all strings containing even number 0's and 1's within an alphabet $\sum = \{0, 1\}$.	5M	L6	C222.1
	Design an DFA which accepts strings which ends with 00|11 within an alphabet $\sum = \{0, 1\}$.	5M	L6	C222.1
4	Convert the following NFA-Ɛ in to NFA,	10M	L5	C222.1

				
	a) Design a DFA which accepts set of all strings that starts with 1 and ends with 0 within an alphabet ∑ = {0, 1}. b) Design an NFA with Multiple Final States.	**10M**	L6	C222.1
	Convert the following NFA in to DFA, 	**10M**	L5	C222.1

Q. No	Question (s)	Marks	BL	CO
	UNIT – II			
1	Define Empty Set.	**1M**	L1	C222.1
	Define Null String.	**1M**	L1	C222.1
	Define Identity Rules for Regular Expressions.	**1M**	L1	C222.1
	Define Regular sets.	**1M**	L1	C222.1
	Define Parse Tree.	**1M**	L1	C222.1
2	Discuss about Regular Sets and Regular Language with examples.	**3M**	L2	C222.1
	Discuss about Grammars and Derivation Trees with examples.	**3M**	L2	C222.1
	Discuss about Context Free Grammars with examples.	**3M**	L2	C222.1
	Discuss about Ambiguous Grammars with example.	**3M**	L2	C222.1
	Derive the Regular Expression for the following DFA, 	**3M**	L2	C222.1
3	State and Prove Arden's Theorem.	**5M**	L5	C222.1
	Construct an NFA and NFA-Ɛ for the regular expression 11+00.	**5M**	L6	C222.1
	Discuss about regular grammar, right linear grammar and left linear with examples.	**5M**	L2	C222.1
	Draw a Parse Tree for the Language L={a^nb^n, n>=0} and the CFG with Productions are S-> aSb, S-> Ɛ.	**5M**	L6	C222.1

	Construct an NFA-Ɛ for the regular expression 110(0+1)*.	**5M**	L6	C222.1
4	**a)** Construct an NFA-Ɛ for the regular expression (0+1)*11.	**5M**	L6	C222.1
	b) Explain in detail about Parse Trees, Left and Right Most Derivations.	**5M**	L4	C222.1
	Construct a DFA, NFA and NFA-Ɛ for any regular expression	**10M**	L2	C222.1
	State and Prove Pumping Lemma.	**10M**	L5	C222.1

Q. No	Question (s)	Marks	BL	CO
	UNIT – III			
1	Define Empty Symbol in Stack in the perspective of PDA.	**1M**	L1	C222.2
	Define NOOP operation in PDA.	**1M**	L1	C222.2
	Define Blank Symbol in TM.	**1M**	L1	C222.3
	Define Γ in PDA.	**1M**	L1	C222.3
	Define Turing Machine.	**1M**	L1	C222.3
2	Discuss about Push Down Automata.	**3M**	L2	C222.2
	Discuss about Turing Machine.	**3M**	L2	C222.3
	Discuss about Language of PDA.	**3M**	L2	C222.2
	Discuss about Decidable Problem with examples.	**3M**	L2	C222.3
	Discuss about Undecidable Problem with examples.	**3M**	L2	C222.3
3	Design a PDA for Language L = $\{WCW^r \mid W \in (a + b)^*\}$.	**5M**	L4	C222.2
	Explain about Instantaneous Description of PDA.	**5M**	L4	C222.2
	Design a PDA for the Language L = $\{a^n b^{2n} \mid n>0\}$.	**5M**	L4	C222.2
	Explain in detail about Universal Turing Machine.	**5M**	L4	C222.3
	Design a PDA for the Language L = $\{WW^r \mid W \in (a,b)^*\}$.	**5M**	L4	C222.2
4	Explain about Turing Machine as an Adder and Language of a Turing Machine.	**10M**	L4	C222.3
	Explain about Recursive Language and Recursively Enumerable Languages with examples.	**10M**	L4	C222.3
	Explain about Turing Machine as a Comparator and as a Substractor.	**10M**	L4	C222.3

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	UNIT – IV			
1	Define Compiler.	**1M**	L1	C224.4
	Define Pre-Processor.	**1M**	L1	C224.4
	Define an Assembler.	**1M**	L1	C224.4
	Define First Symbol.	**1M**	L1	C224.4
	Define Follow Symbol.	**1M**	L1	C224.4
2	Discuss about First & Follow Symbols with examples.	**3M**	L2	C224.4
	Discuss about Token and Lexemes.	**3M**	L2	C224.4
	Discuss about Input Buffering.	**3M**	L2	C224.4
	Discuss about CFG, Derivation of a Grammar.	**3M**	L2	C224.4
	Discuss about of Parsing and Types of Parsing.	**3M**	L2	C224.4
3	Explain in detail about Complier Process.	**5M**	L4	C224.4
	Explain in detail about the role of Lexical Analyzer.	**5M**	L4	C224.4
	Explain in detail about Recursive Descent Parsing with Backtracking.	**5M**	L4	C224.4
	Explain in detail about any one Bottom-up Parsing.	**5M**	L4	C224.4
	Explain in detail about Phases of Compilation.	**5M**	L4	C224.4
4	**a)** Explain in detail about the role of Syntax Analyzer. **b)** Explain in detail about Predictive Parsing.	**10M**	L4	C224.4
	a) Explain in detail about LR (0) Parsing. **b)** Explain in detail about Lexical-Analyzer Generator Lex.	**10M**	L4	C224.4
	a) Explain in detail Scanning & Parsing. **b)** Explain in detail about LL(1) Parsing.	**10M**	L4	C224.4

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	UNIT – V			
1	Define Semantics.	**1M**	L1	C224.6
	Define Semantic Rules.	**1M**	L1	C224.6
	Define Attribute.	**1M**	L1	C224.6
	Define Actual Parameters.	**1M**	L1	C224.6
	Define Formal Parameters.	**1M**	L1	C224.6
2	Discuss about Syntax Directed Translation.	**3M**	L2	C224.6
	Discuss about Syntax Directed Definition.	**3M**	L2	C224.6
	Explain in detail about Types of Attributes.	**3M**	L4	C224.6
	Discuss about Symbol Table.	**3M**	L2	C224.6
	Explain in detail about Intermediate Code Generation.	**3M**	L4	C224.6
3	Discuss about Activation Record.	**5M**	L2	C224.6
	Distinguish between S-attributes and L-attributes.	**5M**	L2	C224.6
	Explain in detail about Dependency Graph.	**5M**	L4	C224.6
	Explain in detail about 3 Address Code Representation.	**5M**	L4	C224.6
	Explain in detail about Run-Time Environment.	**5M**	L4	C224.6
4	Explain in detail about Representation and Operations on Symbol Table	**10M**	L4	C224.6
	Explain in detail about Intermediate Code Generation and 3 Representations of Intermediate Code Generator.	**10M**	L4	C224.6
	Explain in detail about Storage Allocation.	**10M**	L4	C224.6