O.P.Code: 19CS0509

R19

H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR (AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations May/June-2024 FORMAL LANGUAGES AND AUTOMATA THEORY

(Common to CSE & CSIT)

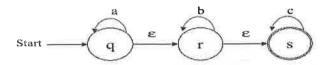
Time: 3 Hours

Max. Marks: 60

(Answer all Five Units $5 \times 12 = 60$ Marks)

UNIT-I

Convert the following NFA with ε moves to DFA without ε moves by ε- CO1 L3 12M closure method.



OR

2 a State what is meant by finite automata and discuss the Applications and CO1 L3 6M Limitations FA.

b Construct DFA for the given NFA

CO1 L6 6M

	Next state		
	0	1	
\rightarrow q0	<i>q0,q1</i>	q0	
q1	q2	q1	
q2	q3	q3	
(g3)		q2	

UNIT-II

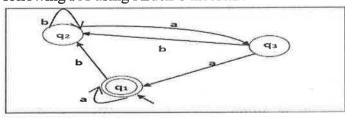
3 a Construct an equivalent FA for the given regular expression (0+1)*(00+11)(0+1)*.

CO2 L3 6M

6M

6M

b State Arden's theorem and construct the regular expression for the CO2 L3 following FA using Arden's theorem.



OR

4 a Convert the given RG to FA.

CO₂ L₃

S→ aA/bB/a/b

A→ aS/bB/b

B→aA/Bs

b Construct an equivalent FA for the given regular expression.

CO₂ L₆ 6M

10 + (0 + 11) 0* 1

	UNIT-III			17
5	a State what is meant by derivation and parse tree with examples.		L1	4M
	b Construct Leftmost, Rightmost derivation and derivation tree for the string 0100110.		L6	8M
	S→0S/1AA			
	A→0/1A/0B			
	B→1/0BB			
	OR			
6	a Define Greibach Normal Form	CO ₃	L1	2M
	 b Convert the following grammar into Greibach Normal Form. S→AA/a 		L3	10 M
	A→SS/b			
	UNIT-IV			
7	Construct a PDA to accept the language $L = \{a^n b^{2n}, n \ge 1\}$ by empty stack and final state.	CO4	L6	12M
	OR			
8	Construct PDA from the following Grammar.	CO4	L6	6-0
				M
	(i) $S \rightarrow Ab$, $B \rightarrow bA/b$, $A \rightarrow aB$			
	(ii) S→0BB B→0S /1S/0			
	UNIT-V			
9	Design a Turing Machine to accept the set of all palindrome over	CO5	L6	12M
	{0,1}*. Draw the transition diagram for the same.			
40	OR			
10	Explain the various types of Turing machine.	CO5	L2	12M
	*** END ***			