

Reg.No:

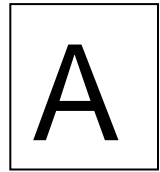
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SNS College of Technology, Coimbatore-35.
(Autonomous)

B.E/B.Tech- Internal Assessment -I
Academic Year 2023-2024(ODD)

Fifth Semester



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

19CSB301 – AUTOMATA THEORY AND COMPILER DESIGN

Time: 1^{1/2} Hours

Maximum Marks: 50

Answer All Questions

PART-A (5 x 2 = 10 Marks)

- | | | | |
|----|---|-----|-----|
| 1. | List the types of grammar based on Chomsky Hierarchy | CO1 | REM |
| 2. | Differentiate PDA & TM with graphical notation | CO1 | ANA |
| 3. | Construct the Deterministic Finite Automata for set of strings over {a, b} which has atleast 1a | CO1 | APP |
| 4. | Construct the Lexical & Semantic Analysis for Total= Count + Rate*10 | CO2 | APP |
| 5. | Define Preprocessor | CO2 | UND |

PART-B (13+13+14 = 40 Marks)

Construct the DFA & NFA for the following by their regular language and regular expression over {0,1}/{a,b}:

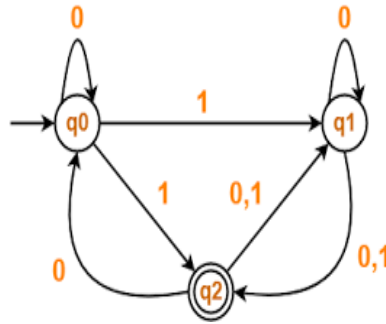
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|----|-----|--|-----|-----|
| 6. | (a) | (i) Set of strings that begins with 0 | CO1 | APP |
| | | (ii) Set of strings that begins with 0 and ends with 1 | | |
| | | (iii) Set of strings that ends with bb | 13 | |
| | | (iv) Set of strings that has at least 1 a | | |

(or)

- | | | | | |
|-----|--|----|-----|-----|
| (b) | Construct the minimized DFA for the given transition table | 13 | CO1 | APP |
|-----|--|----|-----|-----|

	0	1
→q₀	q₁	q₅
q₁	q₆	q₂
*q₂	q₀	q₂
q₃	q₂	q₆
q₄	q₇	q₅
q₅	q₂	q₆
q₆	q₆	q₄
q₇	q₆	q₂

7. (a) Define Finite automata and explain on the types of finite automata and convert the following NFA to DFA 13 CO1 APP



(or)

- (b) Outline the following: 13 CO2 UND
 (i) Language Processing System
 (ii) Compiler Construction Tools
8. (a) Explain how the Turing machine is more powerful than other automata with its formal and graphical representation. Construct the Turing machine for Language 01^*0 14 CO1 APP
- (or)
- (b) Elaborate on the various phases of compiler and trace it with the program segment (position:=initial + rate * 60) 14 CO2 APP

(Note: UND-Understand REM-Remember ANA-Analyze APP-Apply CRE-Create)

Prepared By

Verified By

HoD