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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

B

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)

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|---|-----|-----|
| 1. Write the Rules for Type 0 and Type 2 Grammar in Chomsky Hierarchy | CO1 | UND |
| 2. List the cousins of compiler | CO1 | UND |
| 3. Differentiate NFA and DFA | CO1 | ANA |
| 4. Construct the DFA for 0 (0+1)* | CO1 | ANA |
| 5. Define Sentinel | CO2 | REM |

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

6. (a) Construct DFA equivalent to NFA $N = \{(p, q, r, s), (0, 1), S, p, (s)\}$, where S is defined as

S	0	1
p	{p,q}	{p}
q	{r}	{r}
r	{s}	-
s	{s}	{s}

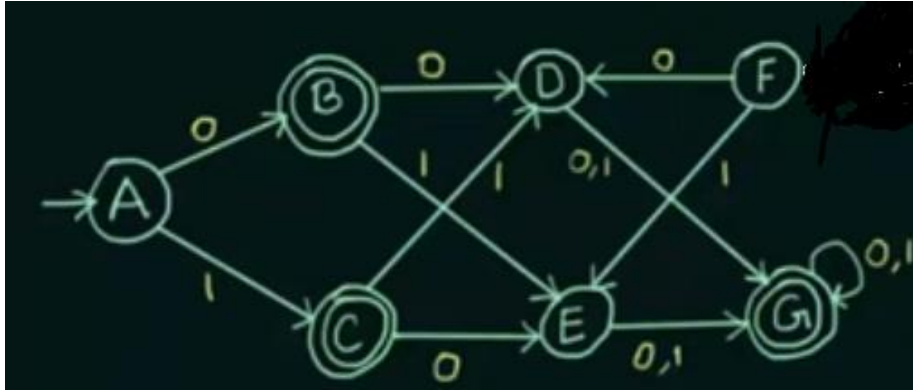
(or)

(b) Explain how Pushdown Automata is more powerful than Finite automata with its formal and graphical representation. Construct the Pushdown Automata for Language $L = \{0^n 1^n | n \geq 0\}$

7. (a) Elaborate the various phases of compiler and trace it with the program segment $(a=b+c*5)$

(or)

(b) Find the minimized DFA for the given DFA



8. (a) Construct the Regular Expression, DFA & NFA which accepts a string over $\{0,1\} / \{a,b\}$

- Set of strings that has exactly one a
- set of strings that has atmost 1a
- set of strings that has atleast 1a
- set of strings that start with 0 and end with 11

(or)

(b) Outline on following:

(i) How language is processed explain with neat diagram? 4 CO2 UND

(ii) Buffer pair for sentinels 10 CO2 UND

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