

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

MCA (Sem.-3)
THEORY OF COMPUTATION
Subject Code : PGCA 1927
M.Code : 90800
Date of Examination : 18-06-2024

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

- a) DFA
- b) Moore
- c) Ambiguity
- d) Type-2 grammar
- e) CNF
- f) Left context
- g) Language
- h) Unit Productions
- i) PDA
- j) Transition Diagram.

SECTION-B

2. Construct a Moore machine equivalent to the Mealy machine M defined as follows:

Present State	Next State			
	a = 0		a = 1	
	state	output	state	output
$\rightarrow q_1$	q_1	1	q_2	0
q_2	q_4	1	q_4	1
q_3	q_2	1	q_3	1
q_4	q_3	0	q_1	1

3. Write a note on how to minimize finite automata.
4. Define regular sets and write its closure properties.
5. Find a grammar in GNF equivalent to the grammar

$$\mathbf{E \rightarrow E + T \mid \quad T \rightarrow T * F \mid F \quad F \rightarrow (E) | a.}$$

SECTION-C

6. Describe TM and its representations in detail.
7. Design PDA for $\{a^m b^m \mid m \geq 1\}$.
8. Explain in detail the Chomsky classification of languages.
9. Write a note unsolvable problem for context-free languages and classifying complexity.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.