

Roll No.

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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (Information Technology) (Sem.-7)

THEORY OF COMPUTATION

Subject Code : BTIT-904

M.Code : 71983

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**1. Write briefly :**

- a) Moore Machine
- b) DFA
- c) TM
- d) Grammar
- e) Yield
- f) Instantaneous Description
- g) Right context
- h) UNIT Production
- i) Parse tree
- j) CNF and GNF

SECTION-B

2. Construct a finite automata equivalent to the regular expression :

$$(0+1)^* (00 + 11) (0 + 1)^*$$

3. Explain the concept of ambiguity with the help of example.
4. Construct a Moore machine equivalent to the Mealy machine M defined by following table :

Present State	Next State			
	a = 0		a = 1	
	State	Output	State	Output
→q ₁	q ₁	0	q ₂	1
q ₂	q ₄	0	q ₄	0
q ₃	q ₂	0	q ₃	1
q ₄	q ₃	1	q ₁	1

5. State and Describe pumping lemma
6. Find a reduced grammar equivalent to the given grammar

$$S \rightarrow AC \mid B, A \rightarrow a, C \rightarrow c \mid BC, E \rightarrow aA \mid e$$

SECTION-C

7. Design PDA for $\{ww^T \mid w \in \{a,b\}^*\}$
8. Give rules of converting CFG into PDA.
9. Describe any two representation of TM.

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