

Roll No

MCADD-604

M.C.A. (Integrated) VI Semester

Examination, November 2019

Theory of Computation

Time : Three Hours

Maximum Marks : 70

- Note:** i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) What is Alphabet? Define language over an alphabet.
b) What is set? List out the operations performed on sets.
2. a) Design a DFA which accept the string aba?
b) Explain Melay and Moore models.
3. a) Write the closure property of Regular Expressions.
b) Explain Chomsky classification of a language.
4. Show that the following grammars are Ambiguous
i) $S \rightarrow SS / a / b$
ii) $S \rightarrow A / B / b, A \rightarrow \alpha AB / ab, B \rightarrow abB / \wedge$
5. a) Construct a PDA which accept the set of string over $\{a, b\}$ with equal number of a's and b's such that all a's and b's are consecutive?
b) Explain deterministic and non deterministic PDA.

6. What is Turing machine? Explain various types of Turing machine.
7.
 - a) Explain Parse Tree with tacking a suitable example.
 - b) Explain decidability and undecidability.
8. Write short notes (any three):
 - i) Linear Bounded Automata
 - ii) Halting problem in TM
 - iii) Regular expression and sets
 - iv) Recursive set
