

Exam. Code : 206702

Subject Code : 4619

M.Sc. (Computer Science) 2nd Semester

THEORY OF COMPUTATION

Paper : MCS-201

Time Allowed—Three Hours] [Maximum Marks—100

Note :— Attempt any **FIVE** questions. All questions carry equal marks.

1. Derive a grammar for odd length palindromes generated over $\Sigma = \{0, 1\}$. Hence convert it to Chomsky Normal form.
2. Give a regular expression for representing strings generated over $\Sigma = \{0, 1\}$ ending with 01. Give also corresponding regular grammar.
3. What is Kuroda Normal Form ? Give a grammar in that form ? What type of grammar it will be ?
4. Design an automata having one self loop and at least two final states. Write the grammar corresponding to the automata.
5. Design a PDA for accepting even length palindrome generated over $\Sigma = \{2, 3\}$.

6. Design a Turing machine to add two numbers.
7. Describe the formal properties of LL(k) grammars.
8. Write short notes on any **TWO** of the following :—
 - (a) Closure properties of a grammar
 - (b) Derivation Graph
 - (c) Rewriting system.