

Exam. Code : 206702

Subject Code : 5234

M.Sc. Computer Science 2nd Semester
MCS-201 THEORY OF COMPUTATION

Time Allowed—3 Hours]

[Maximum Marks—100

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

1. Drive a grammar for even length palindromes generated over $\Sigma = \{0, 1\}$. Hence convert it to Chomsky Normal form.
2. Give a regular expression for representing strings generated over $\Sigma = \{0, 1\}$ starting 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 cycle involving two states and at least two final states. Write the grammar corresponding to the automata.
5. Design a PDA for accepting odd length palindrome generated over $\Sigma = \{2, 3\}$.

6. Design a Turing machine for accepting the strings generated over $\Sigma = \{a, b\}$ having substring aba .
7. Describe the formal properties of $LR(k)$ grammars. 20
8. Write short notes on any **two** of the following :
 - (a) Linear grammars
 - (b) Derivation Graph
 - (c) Context sensitivity.