Con. 5867-08.   **RC-6479**

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(REVISED COURSE)

(3 Hours)   **[Total Marks : 100**

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N.B. : (1) Question No. 1 is **compulsory.**
      (2) Attempt any **four** questions from the **remaining** questions.

1. (a) Design the DFA for the language, contains strings in which leftmost **10**
     symbol differ from rightmost symbol. Σ is given { 0, 1 }.
  (b) What is Turing machine ? Explain different techniques for Turing **10**
     machine construction.

2. (a) Compare and contrast Moore and Mealey machine. Design a Mealey **10**
     machine to convert each occurrence of substring abb by aba. $\Sigma = \{ a, b \}$
  (b) What is parsing ? What are the two different parsing methods ? **10**
     Explain their differences with examples.

3. (a) Prove that it is undecidable whether a context free grammar is ambiguous. **10**
  (b) Prove the variations and equivalence of the push down automata. **10**

4. (a) State and prove pumping Lemma for context free languages. **10**
  (b) Design a grammer for accepting an Even Palindrome over $\Sigma = \{ a, b \}$. **10**

5. (a) Design a Turing machine to Compute n !. **10**
  (b) Explain GNF with suitable example. **10**

6. (a) Write a program to translate a regular expression to finite automata. **10**
  (b) Construct a NFA for the regular expression 01* + 1 and convert it **10**
     to DFA.

7. Write a detail note on (any **four**) :— **20**
    (a) Post correspondence problem
    (b) Halting problem
    (c) Universal TM
    (d) Myhill-Nerode's theorem
    (e) Ambiguity resolution.

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