Roll No. ....

2119

B. E. (IVth Semester) (CSE)

Examination, May, 2012

THEORY OF AUTOMATIC & COMPUTATION

Paper : CSE-206-E

Time : Three Hours]   *[Maximum Marks : 100*

Before answering the question, candidates should ensure that they have been supplied the correct and complete question paper. No complain in this regard, will be entertained after examination.

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

1. (a) Show some regular language L, any FA recognizing L must have two or more accepting states, with help of example. Characterize those regular languages for which this is true and not true.   10

   (b) Show equivalence of DFA and NDFA & Vice versa using some example.   10

2. (a) What do you mean by FSM ? Illustrate properties & limitations of FSM.   10

     (b) What is Moore Machine ? Find out the equivalence of Moore and Mealy machines with help of example.   10

3. (a) State and prove Myphilt Nerode Theorem. Also minimize some finite automata.   10

     (b) What do you mean by pumping lemma and regular sets ? Using the concept of pumping Lemma prove, that the language $L = \{a^n b^n c^n \mid n > 1\}$ is regular or not.   10

4. (a) State and prove Griebach Normal Form. Also show using some example.   10

     (b) Let a be the grammar

     $S \rightarrow aB/bA$ $A \rightarrow a/aS/bAA$

     $B \rightarrow b/bS/aBB$.

     For the string "aaabbbabba" find out left most & right most derivations and parol tree.   10

5. (a) What is PDA ? What are its applications.   10

(b) Construct a PDA equivalent to the grammar

S → aS/a, A/bB, A → aS/bS/a.   10

Find whether the string "ababbb" will be accepted by it or not.

6. (a) Design a Turing machine to recognize the string with odd number of O's and even number of I's. 10

(b) Explain Halting problem with help of example. 10

7. (a) If L is a context sensitive language, then prove L is accepted by some linear and non-linear bounded automata.   10

(b) Describe about Chomsky hierarchies of grammars.

10

8. Write short notes on the followings :   10 x 2 = 20

(a) Commutability

(b) Primitive Recursive functions.