DEERWALK INSTITUE OF TECHNOLOGY			
FINAL EXAMINATION		**SUBJECT**	CSC-252: Theory Of Computation
PASS MARK	32	**FULL MARK**	80
TIME	3 Hrs	**DATE**	27th November,2013.

INSTRUCTIONS

- *Do not write anything on the question paper.*
- *Please write your name, roll number and other details very clearly on the front page of the answer sheet.*
- *If you are using multiple answer sheets, ensure that they are safely stapled together.*
- *Any attempt to cheat in any manner will result in automatic expulsion..*
- *If you need any kind of help please raise your hand.*
  Good luck and all the best.

Attempt all questions [10*8=80]

1. Define following terms with appropriate example: Alphabets, Strings, Empty Strings, Length of a String, Power of an Alphabet, Languages.
2. What is regular language? Describe deterministic finite automata with suitable example.
3. Design the NFA for the language represented by the regular expression (0+1)*001. Convert that NFA into DFA with subset construction method.
4. Define pumping lemma for regular languages. Show that the language $\{0^n1^n|n>0\}$ is not regular.
5. What is Context-Free Grammar? Define the CFG of the language consisting of all strings of even length.
6. Consider the CFG G defined by productions:

   S->aS|Sb|a|b

   Describe the language informally. Give leftmost and rightmost derivations for the string aaaabbb.
7. Define Chomsky Normal Form (CNF). Describe the procedure to eliminate the useless symbols using suitable example.
8. Write the formal definition of Pushdown Automata (PDA) with appropriate example. Describe the approaches to accept the language by the PDA.
9. What is Turing Machine? Design the Turing machine for the language $\{a^nb^n|n>=1\}$.
10. Write short notes on (a) Storage in the state for Turing machine, and (b) multiple tracks for Turing machine.