

Print Family (i.e., last) Name: _____

Print Given (i.e., first) Name: _____

Instructions:

- Write all answers in the space provided.
- If you need to do scratch work, use the backs of the sheets.
- During this quiz it is prohibited to:
 1. exchange information with any other person in any way, including by talking or exchanging papers or books;
 2. use any electronic aid, including calculators;
 3. use any books or notes;
 4. leave the classroom before you complete and turn in your quiz.

I have read and understand all of the instructions above. On my honor, I pledge that I have not violated the provisions of the NJIT Academic Honor Code.

Signature and Date

1. Give a context-free grammar for the language $L = \{w \in \Sigma^* : w = \text{reverse}(w)\}$, where $\Sigma = \{a, b\}$. Be sure to define the set of terminals, nonterminals and productions.

2. Let L be the language generated by the following context-free grammar:

terminals: $\Sigma = \{a, b\}$

nonterminals: $\Omega = \{S, X\}$

productions:

$$S \rightarrow aXbSa \mid bX \mid a$$

$$X \rightarrow SSba \mid bab \mid b$$

Give a context-free grammar for L in Chomsky normal form. Be sure to define the set of terminals, nonterminals and productions.