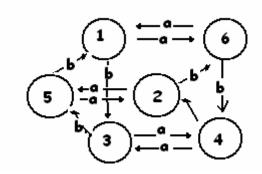## 1. (5 Points) True or False:

a) Regular Languages are always Context-Free Languages True   False
b) Context Free Languages are always Regular Languages True   False
c) The grammar S$\rightarrow$ 0S |0S1S |ε is ambiguous   True   False
d) The language {$a^n b^n c^n$} is regular   True   False
e) The language {$a^n b^n c^n$} is context-free   True   False

2. (10 Points) Minimize the following dfa:

#3. (20 Points) a) Create a grammar that generates the set of all strings over {0,1} with an equal number of 0's and 1's Also b) construct a parse tree and c) leftmost derivation of *0011*. d) Is your grammar ambiguous? Why or why not?

#4. (5 Points) Find the Start symbol for the Java grammar shown at:
http://www.cse.psu.edu/~saraswat/cg428/lecture_notes/LJava2.html

#5. (10 Points)   For the grammar G:
          S $\rightarrow$ X Z Z X
          X $\rightarrow$ x
          X $\rightarrow$ ε
          Z $\rightarrow$ z
          Z $\rightarrow$ ε

What is L(G)?

#6. Post the CS applications of the following to the bb under Module 5:

a) context-free grammars

(Don't repeat anyone's previous postings)