1. How many valence electrons do the following atoms or ions have?
   a) Nitrogen atom ——
   b) Silicon atom ——
   d) Sodium ion (Na\(^{+1}\)) ——
   e) Oxide ion (O\(^{-2}\)) ——

2. Draw the Lewis structure of ammonia.

3. Draw the Lewis structure of 1,2-dichloroethane.

4. The pKa of methanol (CH\(_3\)OH) is 16 and the pKa of ammonia (NH\(_3\)) is 35. Which is a stronger base methoxide (CH\(_3\)O\(^{-}\)) or amide (NH\(_2\)\(^{-}\))? 

5. Give an example of a carbon compound containing \(\sigma\)(sigma) bonds. Circle a sigma bond. What kind of orbitals are used in \(\sigma\) bonding by carbon?

6. What is the oxidation number of Cr in K\(_2\)Cr\(_2\)O\(_7\)?

7. Complete the following acid-base equations.
   a) HF + LiOH ——
   b) NaHCO\(_3\) + HNO\(_3\) ——

8. What is the pH of 0.01 M NaOH solution in water?

9. The equilibrium constant for the following reaction is 9. What is the percentage of A present at equilibrium? 
   \[ \text{A} \rightleftharpoons \text{B} \]