**Academic Skills Center**

**Gen. Chem. III Exam Review**

1. Balance the following chemical reactions
   1. \_\_\_ZnCl2 + ­­­­\_\_\_AgNO3 🡪 \_\_\_Zn(NO3)2 + \_\_\_AgCl
   2. \_\_\_S8 + \_\_\_HNO3 🡪 \_\_\_H2SO4 + \_\_\_NO2 + \_\_\_H2O
2. Given the following 🡪***unbalanced🡨*** equation: H2 + N2 🡪 NH3
   1. What is the balanced chemical reaction?
   2. If there are 6 g of H2 and 12 g of N2, how many moles of each reactant are there?
   3. Which is the limiting reactant?
   4. How many grams of NH3 are produced?
3. Given 114 g of Al and 186 g Cl2:
   1. What is the greatest amount of AlCl3 that can be produced?
   2. If you produce 75 g of AlCl3, what is the % yield of the reaction?
4. How many grams of CO2 are produced by burning 180 g of C6H12O6?
5. Given the following:

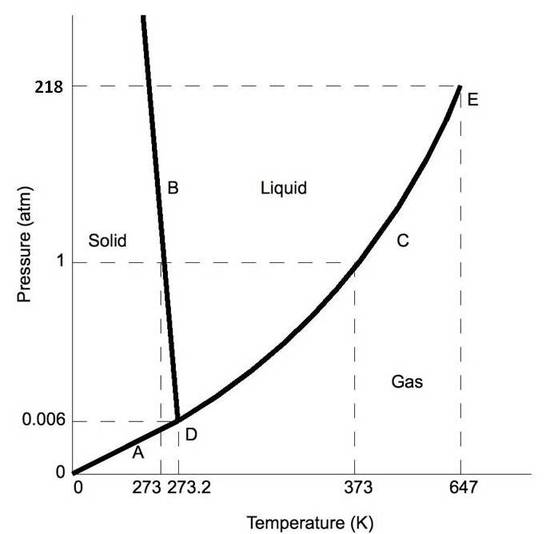
Hg(s) + Cu2+(Aq) 🡪 Hg2+(Aq) + Cu(s)

Hg2+ +2e-‑ 🡪 Hg Eo = 0.85 V

Cu2+ +2e- 🡪 Cu Eo = 0.34 V

* 1. What is oxidized?
  2. What is reduced?
  3. What is the voltage generated by this cell?
  4. What is the anode?
  5. What is the cathode?
  6. Draw this cell

1. In which scenario(s) is entropy increasing?
   1. H2O(l) 🡪 H2O (g)
   2. H2O(l) 🡪 H2O (s)
   3. 2H2(g) + N2(g) 🡪 2H2N (g)
   4. None of the above
2. Given 15 g of H2 at STP (standard temperature and pressure):
   1. Calculate the number of moles of H2
   2. What is the volume taken up by this gas?
   3. If the temperature is increased to 350K, and volume stays the same, what is the new pressure?
3. If you have a 100mL of 10M HCl
   1. How many moles of acid are present?
   2. How many mL of 5M NaOH must be added to neutralize this solution?
   3. Draw this titration curve 😃
4. The new element Elementy McElement Face 😃 has been recently discovered! After conducting a few tests, the following phase diagram was created:



* 1. Label and define the triple point.
  2. Label and define the critical point.
  3. What state of matter is Elementy McElement Face 😃 in at 420 Torr and 70°C?