More Solutions Problems

1. a. How many grams of acetic acid ($C_2H_4O_2$) would you use to make 10L of
      0.1M solution?
   b. What is the % of that solution?

2. a. How much 1M solution of NaCl do you need to make 1L of 0.1M solution?
   b. How much water do you add?
   c. How could you make 10 ml of a 1 µM (10^{-6} M) solution from the 0.1M
      solution you made in part A?

3. a. How could you make 200ml of a 5M glucose solution?
   b. That solution is described as a "stock" solution. You need to use the glucose
      at a final concentration of 0.2M. Describe how you would use the stock
      solution to make 100ml (not more!) of 0.2M glucose.

4. How much agarose would you need for 50ml of a 1.2% solution?

5. How do you make 200 mL of 1X TBE buffer from a 10X TBE buffer stock
   solution? Explain. HINT: X means "times" as concentrated. Think of
   "10X" as a concentration.

6. How do you make 300 µL of pAMP (a plasmid) at 0.2 µg/uL from a stock tube
   of pAMP at 0.67 µg/uL? Explain. Note: µL is microliter and µg is
   microgram.

7. You need to make 1 ml of buffer that consists of 0.1M Tris base and 2mM
   EDTA. You have stock solutions of 1M Tris base and 0.5M EDTA.
   Describe how you could make your solution. HINT: consider each
   component independently. For instance, how much of the 1M Tris would
   you need for 1ml of 0.1M?

8. If you counted 5cells/ml of a mammalian cell culture (using a special slide
   called a hemocytometer) but you had made a 1:10 dilution, how many
   cells are really in your culture? What if you'd made a 1:100 dilution? or a
   1:1000 dilution?