CHEM 232 & 233

PRELAB QUESTIONS

Pre-lab questions

Experiment (1)

1) In the procedure, what are the differences between systems A, system B and system C.

2) How many times you will use the thermometer.

3) What is the condition under which you should comply with before recording temperature?

Pre-lab questions

Experiment (2)

1) Define calorimetry.

2) What are the constituent of the constant-pressure calorimeter?

3) What is the substance which loses heat and that which gains this heat?

Pre-lab questions

Experiment (3)

1) Write the equation used to calculate the amount of heat exchanged as a result of changing the temperature of a substance.

2) Why should you stir the content of the calorimeter tube before you measure and record its temperature?

3) Why transferring the heated metal from the hot water to the calorimeter should be done quickly?

Pre-lab questions

Experiment (4)

1) In this experiment what is the enthalpy of hydration?

2) In step number 5 of the procedure you are asked to be confident about something. What is that thing? And why should you be confident about it.

3) After calculating q, explain how will you calculate ΔH?

Pre-lab questions

Experiment (5)

1) Write the chemical equation of the oxidation of acetone by sodium hypochlorite.

2) Why is it wrong to stir by thermometer?

3) How can you calculate the volume of acetone?

4) In calculations, why the sodium hypochlorite is not used instead of the acetone?

Pre-lab questions

Experiment (6)

1) Define the standard enthalpy of fusion.

2) In the procedure, step number 10 says:
   "Make sure that the mixture contains water in both its liquid state and its solid state" Why?

3) If you are asked to determine $\Delta H^{\circ}_{fus,water}$, why its value is given in the data of the experiment?

Pre-lab questions

Experiment (7)

1) The equation of the solubility of borax in water is:

$$Na_2B_4O_5(OH)_4 \cdot 10H_2O(s) \xrightleftharpoons{H_2O(l)} 2Na^+(aq) + B_4O_5(OH)_4^{2-}(aq) + 10H_2O(l)$$
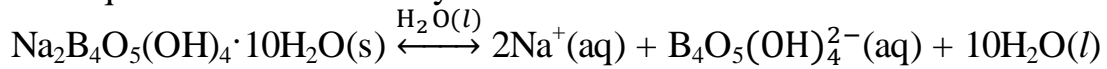
While the equilibrium constant is given by the following equation:

$$K_{sp,borax} = [Na_2B_4O_5(aq)^{2-}][Na^+(aq)]^2$$

Why did not $Na_2B_4O_5(OH)_4 \cdot 10H_2O(s)$ and $H_2O(l)$ appear in the equilibrium constant equation?

2) Calculations requires the concentration of both borate and sodium ions. However, in the procedure you only are able to determine the concentration of borate ions. How can you evaluate the concentration of the sodium ions?

3) What is the indicator used for titration? How does it color change?

Pre-lab questions

Experiment (8)

1) What is infinite dilution?

2) In the procedure, which step is the one that may cause more experimental failure? Rationalize.

3) Write the equation used to calculate q.