Equilibrium Lab Prelab

Please do not give short (one or two word answers) to the questions.

ALL Answers must be written by hand directly into your lab notebooks.

1. Given the following relationships, how would the reaction shift to establish or maintain equilibrium?
   a. Q > K
   b. Q < K
   c. Q = K

2. How would the equilibrium shift given the following stresses on the following reaction?

   \[ \text{A (l) + B (g) } \leftrightarrow \text{2C (g) + D (l)} \quad \Delta H = 145 \text{ kJ} \]

   a. Removal of compound D
   b. Increase in temperature
   c. Decrease in pressure

3. Indicators are usually organic molecules with functional groups that will accept or donate protons to the solution which will change the structure and make the solution change color. How does the precision of a pH measurement done with an indicator compare to that of pH paper or a pH probe?