

Quiz 16– Equilibrium & Review

AP Chemistry

This quiz must be completed and brought to my room before the start of first period on Tuesday. Failure to do so will incur a 25% penalty unless there is a legal reason.

You must show all work in order to receive credit.

AP Instructions:

CLEARLY SHOW THE METHOD USED AND THE STEPS INVOLVED IN ARRIVING AT YOUR ANSWERS. It is to your advantage to do this, since you may obtain partial credit if you do and you will receive little or no credit if you do not. Attention should be paid to significant figures.

Be sure to write all your answers to the questions on the lined pages following each question in the booklet with the goldenrod cover. Do NOT write your answers on the lavender insert.

1. What is the pH of a 5.0×10^{-8} M HCl solution? (Yes there's a trick J)
2. Calculate the pH of a 0.10 M solution of sodium hydrogen phosphate. State any assumptions or approximations used.
3. At 25°C, a 0.100 M solution of HF is 8.1% ionized. Calculate
 - a. The K_a .
 - b. The concentration hydroxide ions.
 - c. The pH of the solution
4. Trichloroacetic acid ($\text{CCl}_3\text{CO}_2\text{H}$) is a corrosive acid that is used to precipitate proteins. The pH of a 0.050 M solution of trichloroacetic acid is the same as the pH of a 0.040 M HClO_4 solution. Calculate the K_a for trichloroacetic acid.
5. A certain public water supply contained .10 ppb (parts per billion), of chloroform, CHCl_3 . How many molecules of CHCl_3 would be contained in a 0.050 mL drop of this water?
6. At 25°C, the vapor pressure of pure benzene is 100 torr, while that of pure ethyl alcohol is 44 torr. Assuming ideal behavior, calculate the vapor pressure at 25°C of a solution which contains 10.0g of each substance.

Instructions

Give the formulas to show the reactants and the products of the following chemical reactions. Each of the reactions occurs in aqueous solution unless otherwise indicated. Represent substances in solution as ions if the substance is extensively ionized. Omit formulas for any ions or molecules that are unchanged by the reaction (net ionic). In all cases a reaction occurs.

7. Dilute hydrochloric acid is added to a solution of potassium sulfite.
8. Solid sodium oxide is added to water.
9. A solution of sodium sulfide is added to a solution of zinc nitrate.

