

If a 1.00 mL sample of the reaction mixture for the equilibrium constant experiment required 32.40 mL of 0.258 M NaOH to titrate it, what is the acetic acid concentration in the mixture? - ANSWER- 8.36 M

1. mols acetic acid = mole NaOH: $.258 \text{ M} \times (32.40/1000)=0.0083592$

2. calculate concentration:

divide # moles by V in L

$.0083592 \times 1000$

If 0.75 g of a monoprotic weak acid required 22.50 mL of 0.510 M NaOH to titrate it, what is the molar mass of the acid? - ANSWER- 65 g/mol

1. find moles of base:

$(.510 \times 22.5)/1000=.011475 \text{ mol NaOH}$

2. find molar mass of acid:

$.75/.011475=65$

The pKa of an acid can be determined through _____ with a strong base. Gradually increase the volume of the base, stopping _____ the equivalence point is reached. The pKa of the acid is equal to the pH at the _____. - ANSWER- - titration

-after

-midway volume to the equivalence point

Identify the acid associated with each conjugate base. - ANSWER- $\text{Cl}^- = \text{HCl}$

Na₂S₂O₃ solution, in M? - ANSWER- .00644

mols thiosulfate= moles KIO₃x6

=9.42E-5

divided by liters (.01463) = .00644

Suppose, in an experiment to determine the amount of sodium hypochlorite in bleach, you titrated a

20.45 mL sample of 0.0100 M KIO₃ with a solution of Na₂S₂O₃ of unknown concentration. The endpoint was observed to occur at 14.05 mL.

How many moles of

KIO₃ were titrated? - ANSWER- .0002045

mol KIO₃=

MKIO₃xVKIO₃

.0100molx.02045L

Suppose in an experiment to determine the amount of sodium hypochlorite in bleach,

0.0000443 mol KIO₃ were titrated with an unknown solution of Na₂S₂O₃ and the endpoint was reached after 17.80 mL.

How many moles of

Na₂S₂O₃ did this require? - ANSWER- .0002658

moles thiosulfate=

Determine what type of reaction each unbalanced chemical equation represents. -
ANSWER- $\text{CaCl}_2 + \text{Na}_3\text{PO}_4 = \text{Ca}_3(\text{PO}_4)_2 + \text{NaCl}$ (double replacement)

predict the products of hydrochloric acid reacting with zinc metal. - ANSWER-
 ZnCl_2 and H_2

Identify the common indicators that a chemical reaction has occurred - ANSWER-
bubbles being produced, a color change, precipitate being formed, a change in temperature

suppose you mix two solutions in a test tube and the test tube becomes hot. this is a
- ANSWER- (sign of chemical change) because (chemical changes can release heat)

Determine whether each observation generally corresponds to a physical change or a chemical change - ANSWER- A solid dissolves in water- (physical change)

The color of a substance changes over time- (chemical change)

bubbles are produced upon mixing two solutions- (chemical)

a solution heats up upon mixing with another- (chemical)

a precipitate is formed from two solutions (chemical)

a liquid freezes into a solid (physical)

identify the meaning of each chemical equation symbol - ANSWER- arrow-
(substances on the reactants side are converted to the substances on the products side)

identify the meaning of each chemical equation symbol - ANSWER- arrow with triangle on top- heat is applied

Cu^{2+} and Bi^{3+} - ANSWER- sulfide salts of these ions are considered insoluble

NH_4^+ - ANSWER- this ion tested when the pH increases and releases as a gas

Ag^+ - ANSWER- the chloride salt is insoluble

NH_4^+ - ANSWER- ammonium ion

$\text{Na}_2\text{Sn}(\text{OH})_4$ - ANSWER- sodium stannite

OH^- - ANSWER- hydroxide ion

S^{2-} - ANSWER- sulfide ion

$\text{K}_4[\text{Fe}(\text{CN})_6]$ - ANSWER- potassium hexacyanoferrate

NH_3 - ANSWER- ammonia

the ammonium ion is a - ANSWER- weak acid

occurs when potassium hexacyanoferrate(II), $\text{K}_4[\text{Fe}(\text{CN})_6]$, is added to a solution containing copper Bi^{3+} and Cu^{2+} cations. - ANSWER- Formation of a red-brown precipitate of $\text{Cu}_2[\text{Fe}(\text{CN})_6]$

occurs when aqueous ammonia is added to a solution containing Bi^{3+} and Cu^{2+} ions. - ANSWER- Formation of a soluble deep blue $[\text{Cu}(\text{NH}_3)_4]^{2+}$

$\text{Ba}(\text{OH})_2$ - ANSWER- base

RbOH - ANSWER- base

HClO_4 - ANSWER- acid

A neutralization reaction is a reaction between - ANSWER- an acid and a base

that results in the formation of - ANSWER- water and salt

Predict the products of hydrobromic acid,

HBr reacting with magnesium hydroxide - ANSWER- MgBr_2 and H_2O

In the titration setup in lab, the buret will be filled with - ANSWER- base

During the titration, a beaker placed underneath will contain - ANSWER- acid and indicator

What is the correct reading of the volume in the pictured buret? - ANSWER- 39.95

in kinetic analysis of this experiment for the reaction of iodine ion with hydrogen peroxide, state the purpose for each of the following solutions. (quiz 3) - ANSWER- deionized water = deionized water acts as a solvent

buffer solution (acetic acid, sodium acetate mixture) = the buffer solution maintains the pH of the solution.

In some solid calcium carbonate samples, calcium bicarbonate is also present. Write a balanced equation for its reaction with hydrochloric acid. (quiz 1) - ANSWER- $\text{Ca}(\text{HCO}_3)_2 + 2 \text{HCl (aq)} \text{ yields } \text{CaCl}_2 + 2 \text{H}_2\text{O} + 2\text{CO}_2 \text{ (g)}$

A thermometer is not present in the space in which the $\text{CO}_2 \text{ (g)}$ is collected in this experiment. A. How then is the temperature of the $\text{CO}_2 \text{ (g)}$ determined in this experiment? B. The mass of a gas is elusive. How is the mass of the $\text{CO}_2 \text{ (g)}$ collected over water determined in this experiment? (quiz 1) - ANSWER- a. The temperature of the gas is determined by finding the temperature of the water.

b. We calculate the final mass by determining the mass of the sample before the reaction and the final mass of the sample.

Write a balanced equation for the reaction of the active ingredient in Tums with excess acid. (quiz 5) - ANSWER- $\text{CaCO}_3 \text{ (s)} + 2 \text{HCl (aq)} \text{ yields } \text{CaCl}_2 \text{ (aq)} + \text{H}_2\text{O (l)} + \text{CO}_2 \text{ (g)}$

Identify the two most common anions present in antacids. (quiz 5) - ANSWER- Hydroxide: OH^- and Carbonate: CO_3^{2-}

How much time should be allowed for the titrant to drain from the buret wall before a reading is made? (quiz 5) - ANSWER- 10-15 seconds

how many moles of stomach acid would be neutralized by one tablet of Tums 1000 that contains 1000 mg of calcium carbonate?

The standard solution is a solution of known concentration that can be used to titrate a solution of unknown concentration.

If you plot the absorbance measurements of solutions vs. their concentrations, what is the slope equal to? - ANSWER- Molar absorptivity, if the path length is 1 cm

What is the concentration (in M) of a sample of the unknown dye with an absorbance of 0.26 at 542 nm?

$$y = 15200x - 0.018 \quad \text{- ANSWER- } 0.26 = 15200x - 0.018$$

$$x(\text{concentration}) = 1.83 \times 10^{-5}$$

The molar absorptivity of a compound at 500 nm wavelength is $252 \text{ M}^{-1}\text{cm}^{-1}$. Suppose one prepares a solution by dissolving 9.00140×10^{-5} moles of a solute in enough water to make a 500.0 mL solution. What would be the absorbance in a 3.00 mm pathlength cell? - ANSWER- Absorbance = molar absorptivity * path length (cm) * concentration

Concentration = moles/volume

0.21168

To run a spectrophotometry experiment, begin by

____ the spectrophotometer and preparing the samples. Be sure to select the correct _____, then run a measurement on the

____ Follow up by running measurements on

____ solutions. Once data is collected, turn off the instrument, clean the area, and discard the samples. - ANSWER- -warming up