Redox Titration

- Mn^{2+} is oxidized to the permanganate ion, MnO_4^- by the bismuthate ion, BiO_3^- in an acidic solution. BiO_3^- is reduced to Bi^{3+} in the reaction.
  - Write the balanced equation
  - How many grams of $NaBiO_3$ are required to react with 25.00 mL of a 0.015 M solution of $Mn(NO_3)_2$ solution?

Trends

- Rank the following atoms from lowest value to highest value for the indicated value. F, Rb, O, Ga, P, and Ca
  - For atomic radius
  - For electronegativity

Writing Equations

- Write the complete molecular equation, the complete ionic equation, and the net ionic equation for the reaction between copper(II) sulfate and barium chloride.

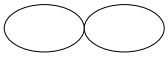
Writing Equations

- Complete and balance the following equations:
  - $Na_2SO_3 + Ba(NO_3)_2 \rightarrow$
  - $HCHO_2 + K_2CO_3 \rightarrow$
  - $NH_4Br + Pb(CH_3CO_2)_2 \rightarrow$
  - $NH_4ClO_4 + Cu(NO_3)_2 \rightarrow$

Chapter 7

- Give a possible quantum number set for the last electron placed in an arsenic atom
- Which of the following is a possible quantum number set, $\{n,l,m_l\}$ for the orbital shown below?

2,2,0
2,1,2
3,1,0
3,2,-1



Chapter 7

- Which of the following pairs of atoms would have the higher first ionization energy?
  - N or O
  - Ga or Mg
  - Rb or K
  - S or F

Chapter 7

- How many electrons can have the following quantum number(s)?
  - A. n=5
  - B. n=4 and l=2
  - C. n = 4 and m_l = -1
  - D. n = 3 and m_s = 2
  - E. n = 3 and m_l = -3

Quantum

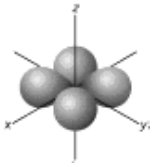
- 1. What is the maximum number of orbitals which can have n = 3 and m_l = 0?
- 2. What is the maximum number of electron in a Mn atom which can have values of n = 3 and m_s = -1/2?

Quantum

- For each of the following quantum number sets, {n, l, m_l}, determine the type of orbital.
  - A. {1,0,0}
  - B. {4,2,-1}
  - C. {5,1,1}
  - D. {3,2,-3}

Quantum

- Name a possible quantum number set for the orbital shown below.



Molarity

- Calculate the chloride ion in the final solution if 25.00 mL of 0.015 M HCl is mixed with 48.000 mL of NaOH.

Solubility

- Which of the following combinations would yield a precipitate?
- $Hg(NO_3)_2$ and NaCl
- H_2SO_4 and $Ba(OH)_2$
- HF and $Ca(OH)_2$

Solubility

- Which statement(s) are true regarding solubility
- 1. Soluble compounds do not dissociate
- 2. An electrolyte must dissociate into ions.
- 3. $CH_3CH_2CH_2OH$ is an electrolyte
- 4. A strong acid is not an electrolyte

Acids and bases

- List the seven strong acids
- List the 4 strong bases
- List one weak acid
- List one weak base

Stoichiometry

- Calculate the molarity of an NaCl solution if 25.00 ml of water is added to 100.00 ml of a 0.050M NaCl solution.

Ch 4.

- A solution contains Sodium carbonate and sodium acetate. What reagent could be used to separate the two anions?

Ch 4

- Predict the product, if any, when HCl is mixed with the following solutions:

NaCl

PbS

$AgNO_3$

$BaCl_2$

Oxidation Numbers

- What is the oxidation number of the indicated atom in the compound.
- Cl in ClO_2^-
- C in CO_2
- Fe in $FeSCN^{2+}$

EM Radiation

- Calculate the energy of 1.0 mol of blue light photons that have a wavelength of 486 nm.

Quantum Numbers

- Write the electron configuration of the following atoms or ions.
  - Ag
  - F
  - Na^+
  - Cu^+
  - Sn^{2+}
  - Po

Trends

- Rank the following atoms from smallest to largest:
  - Ne, Li, Ba, O, B
  - Ca^{2+}, Cl^-, Ar, K^+ S^{2-}

Ch 4.

- A solution contains Sodium carbonate and sodium acetate. What reagent could be used to separate the two anions?

Ch 4

- Predict the product, if any when HCl is mixed with the following solutions:

NaCl

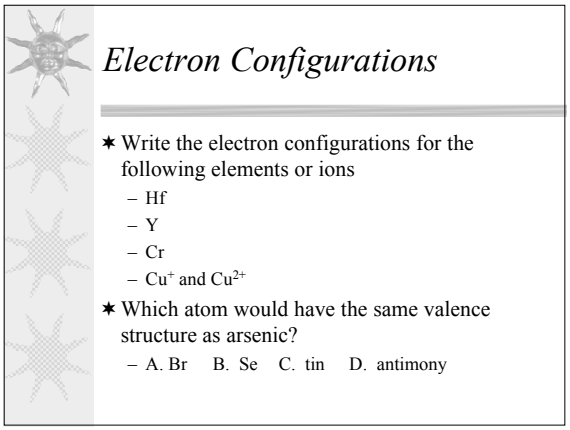
PbS

$AgNO_3$

$BaCl_2$

Redox

- Balance the following reaction in an acidic environment):
- $HNO_2 + I^- \longrightarrow I_2 + NO$
- Which compound is oxidized?
- Which compound is the oxidizing agent?


Electron Configurations
Write the electron configurations for the following elements or ions
Hf
Y
Cr
Cu^{+} and Cu^{2+}
Which atom would have the same valence structure as arsenic?
A. Br B. Se C. tin D. antimony