Redox Titration

- Mn\textsuperscript{2+} is oxidized to the permanganate ion, MnO\textsubscript{4}\textsuperscript{2-}, by the bismuthate ion, BiO\textsubscript{3}\textsuperscript{-}, in an acidic solution. BiO\textsubscript{3}\textsuperscript{-} is reduced to Bi\textsuperscript{3+} in the reaction.
  - Write the balanced equation
  - How many grams of NaBiO\textsubscript{3} are required to react with 25.00 mL of a 0.015 M solution of Mn(NO\textsubscript{3})\textsubscript{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\textsubscript{2}SO\textsubscript{3} + Ba(NO\textsubscript{3})\textsubscript{2} →
  - HCHO\textsubscript{2} + K\textsubscript{2}CO\textsubscript{3} →
  - NH\textsubscript{3}Br + Pb(CH\textsubscript{3}CO\textsubscript{2})\textsubscript{2} →
  - NH\textsubscript{4}ClO\textsubscript{4} + Cu (NO\textsubscript{3})\textsubscript{2} →

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,\ell,m_\ell\}, 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_s = -3

Quantum

1. What is the maximum number of orbitals which can have n = 3 and m_s = 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. CH₃CH₂CH₂OH 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
  - AgNO₃
  - BaCl₂

Oxidation Numbers

- What is the oxidation number of the indicated atom in the compound.
  - Cl in ClO₂⁻
  - C in CO₂
  - Fe in FeSCN²⁺
**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⁺
  - Sn²⁺
  - Po

**Trends**

- Rank the following atoms from smallest to largest:
  - Ne, Li, Ba, O, B
  - Ca²⁺, Cl⁻, Ar, K⁺ S²⁻

**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
  - AgNO₃
  - BaCl₂

**Redox**

- Balance the following reaction in an acidic environment:
  - HNO₂ + I⁻ → I₂ + 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