Testable learning outcomes for CHEM 4 – Exam #3

The slide numbers listed below correspond to those on the posted **PowerPoint slides**. For various reasons, they might not necessarily match the **recorded lectures**.

1) **All CHEM 4 exams are cumulative.**
    a) You are responsible for all the material that was covered on Exams #1 and 2.
    b) In particular, make sure you are able to do all three types of naming: ionic, molecular, and acids (Textbook Sections 5.6 – 5.10)

2) **Section 6.1 – 6.3; Moles and molar mass (Wednesday, November 4)**
    a) Know the definitions/terms. [Slides 5, 6, 9, and 12]
    b) Be able to carry out calculations using molar mass and Avogadro's number. [Slides 7 – 8, 10 – 11, and 13 – 15] and [Slide 1 from next class]

3) **Section 6.4; Molar mass of compounds (Friday, November 6)**
    a) Know the definitions/terms. [Slides 4 and 5]
    b) Be able to calculate molar mass for a given compound with the correct number of digits and use that molar mass to carry out calculations. [Slides 6 – 11] and [Slide 1 from next class]

4) **Section 6.5; Mole-to-mole ratios (Monday, November 9)**
    a) Be able to carry out calculations relating "moles of X" to "moles of Y". [Slides 4 – 11] and [Slide 1 – 3 from next class]

5) **Section 6.6 – 6.7; Mass percent (Friday, November 13)**
    a) Be able to calculate mass percent for a given element in any compound and use that mass percent to carry out calculations. [Slides 6 – 12] and [Slide 1 from next class]

6) **Section 6.8 – 6.9; Molecular and empirical formulas (Monday, November 16)**
    a) Know the definitions/terms. [Slide 4]
    b) Given a drawing of a molecule, be able to determine its molecular and empirical formulas. [Slides 5 – 7]
    c) Given experimental data be able to determine a compound's empirical and molecular formulas. [Slides 8 – 13] and [Slide 1 from next class]

7) **Section 3.7, 7.1 – 7.4; Chemical reactions (Wednesday, November 18)**
    a) Know the definitions/terms. [Slide 4 – 5]
    a) Be able to balance chemical equations. [Slide 6 – 12] and [Slide 1 from next class]

8) **Section 7.5 – 7.7; Solubility rules and net ionic equations (Friday, November 20)**
    a) Know the definitions/terms. [Slides 4 – 5]
    b) Be able to use solubility rules to determine if a compound is soluble in water. [Slides 6 – 10]
    c) Be able to write the net ionic equation (NIE) for a precipitation reaction. [Slides 11 – 16] and [Slides 1 – 2 from next class]

9) **Section 7.8; Acid/base reactions (Monday, November 23)**
    a) Know the definitions/terms. This includes being able to draw pictures for strong and weak acids/bases. [Slide 5 – 8] and [Slide 1 from next class]
    b) Be able to use write acid-base neutralization reactions. [Slides 9 – 10]

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10) Section 7.8 continued; Gas forming reactions (This was our asynchronous lecture posted on Wednesday, November 25)

a) Be able to write balanced chemical reactions for our 4 gas-forming reactions. [Slide 4 – 7 and 9 – 12] and [Slide 1 from next class]
b) **Not responsible for**: Video on ocean acidification. [Slide 8]

11) Section 7.9 – 7.10; Types of reactions (Monday, November 30)

a) Know the definitions/terms. [Slides 6 – 7]
b) Be able to give different every day examples of redox reactions. [Slides 8 – 11]
c) Be able to identify if a reaction is a redox reaction. [Slides 12 – 13]
d) Be able to write balanced combustion reactions for any compound. [Slide 14]
e) Be able to classify reactions [Slides 15 – 17]