

Chemistry 100 Final Exam Study Guide

Final problem set and extra credit points: Choose 18 problems (any problems, but at least one from each section) to complete for 30 homework points and 10 extra credit points. Due at final exam, graded on effort (full effort=full credit).

Chapter 1

- Scientific method (2)
- Conversions (25)

Chapter 2 and Related Topics

- valence electrons (identify the number of valence electrons in: S, Mg, Kr, Br, Si)
- formation of ions, formulas for ionic compounds, names of ionic compounds (10, 17)
- electron dot structures of atoms and simple covalent compounds (draw electron dot structures for: Ne, K, O and the molecules O₂ and CHCl₃)
- atomic number, mass number, isotopes (4)
- balancing chemical equations (balance: C₃H₈ + O₂ → CO₂ + H₂O)
- molar mass, converting grams to moles and moles to grams (21, 37, Convert: 125 g of CH₄ into moles., Convert: 0.452 moles of CO₂ into grams.)

Chapter 3

- molecular shape: distinguish between tetrahedral, pyramidal, trigonal planar, bent and linear (Predict the shapes of: SH₂, SiH₄, HCN, PBr₃)

Chapter 4

- solution concentrations (Calculate the molarity of a solution made from 83.2 g of KNO₃ dissolved in enough water to make 2.00 liters of solution.)
- be familiar with the definition of acids and bases (17 - identify only)
- pH scale (6, 9)

Air Pollution/Acid Rain - Chapter 4 and Notes from 10/1-10/6

- primary components of photochemical smog (Identify the three things needed for photochemical smog formation and the products produced.)
- acid rain sources (What is the primary source of acid rain caused by NO_x? By SO₂?)

Chapter 5

- electron configuration (23, 24)

Chapter 6

- isotopes, nuclear symbols, nuclear equations (8, 17, 21)
- primary sources of ionizing nuclear radiation exposure (natural and artificial) (Identify these sources.)

Chapter 7

- intermolecular forces: ion-dipole, dipole-dipole, hydrogen bonding, dipole-induced dipole, induced dipole-induced-dipole (7, 8)

Chapter 8 (section 8.7)

- CFC's role in ozone depletion (Describe how CFCs are capable of destroying ozone. Also describe how one Cl can destroy 100,000 ozone molecules on average.)
- greenhouse effect (33)

Chapter 9: Sections 9.2, 9.3

- fossil fuels (Identify the primary advantages/disadvantages of coal, petroleum and natural gas)

Chapter 10

- Be able to draw a picture of an addition polymer given the corresponding monomer (Draw a picture of the structure of polypropylene, the monomer is: $\text{H}_2\text{C}=\text{CHCH}_3$)
- Definitions of monomer and polymer (What is the difference between a monomer and a polymer?)