

Chapter 15 Assignments

The following problems will be collected at the first exam.

Review Questions: 3, 6, 7, 10, 14

Problems: 27, 29, 31, 35, 37, 41, 45, 51, 53, 55, 61, 67, 69, 75, 77, 90, 104, 112

Exam Review Topics

terms

Catalyst
Reaction rate
Rate constant
Reaction order
Half-life
Activation energy
Activated complex
Reaction mechanism
Molecularity
Rate determining step

skills/operations

Calculating average reaction rate
Determining reaction order from Rate Law
Determining Rate Law from initial rates
Concentration-time equation for first-order reactions
Relating $t_{1/2}$ to rate constant
Find overall equation from a mechanism
Write rate equation for an elementary reaction
Determining Rate Law from a mechanism

Chapter 16 Assignments

The following problems will be collected at the first exam.

Review Questions: 3, 4, 7, 12, 17, 20

Problems: 21, 27, 29, 31, 33, 35, 37, 39, 41, 43, 49, 53, 57, 59, 63, 67, 69, 80, 84, 90

Exam Review Topics

terms

Chemical Equilibrium
Equilibrium-constant Expression
Equilibrium Constant
Law of Mass Action
Homogeneous Equilibrium
Heterogeneous Equilibrium
Reaction Quotient
Le Chatelier's Principle

skills/operations

Applying Stoichiometry to an Equilibrium Mixture
Writing Equilibrium-constant Expressions
Obtaining an Equilibrium Constant from Molarities
Using the Reaction Quotient
Solving Equilibrium Problems
Applying Le Chatelier's Principle

Chapter 17 Assignments

The following problems will be collected at the second exam.

Review Questions: 4, 6, 10, 15, 22, 28

Problems: 33, 35, 37, 45, 49, 53, 59, 63, 69, 71, 75, 76, 83, 87, 93, 97, 101, 105, 110, 113, 117, 119, 120, 123

Exam Review Topics

terms

Bronsted-Lowry acid/base
 Conjugate acid base pair
 Conjugate acid-base pair
 Amphoteric
 Lewis Acid/base
 Polyprotic acids
 Acid/Base Ionization Constants
 Hydrolysis
 Common Ion Effect
 Buffer
 Self-ionization
 Ion-product constant for water
 pH, pOH

skills/operations

Identifying acids and bases
 Identifying Lewis acids and bases
 Determining relative strengths of acids and bases
 Calculating $[H^+]$ and $[OH^-]$
 Calculating pH and pOH
 Determining K_a (and K_b) from solution pH.
 Calculating Concentration at Equilibrium.
 Predicting Acidity/Basicity of Salts.
 Obtaining K_a from K_b or K_b from K_a .
 Common Ion Effects on Acid Ionization.

Chapter 18 sec. 18.1 thru 18.4 Assignments

The following problems will be collected at the second exam.

Review Questions: 3, 6, 10

Problems: 27, 33, 37, 41, 43, 48, 50, 57, 69, 72

Exam Review Topics

terms

Acid Ionization Constant
 Base Ionization Constant
 Hydrolysis
 Common Ion Effect
 Buffer
 Henderson-Hasselbalch Equation
 Acid-Base Titration Curve
 Equivalence Point

skills/operations

Determining K_a (and K_b) from solution pH.
 Calculating Concentration at Equilibrium.
 Predicting Acidity/Basicity of Salts.
 Obtaining K_a from K_b or K_b from K_a .
 Common Ion Effects on Acid Ionization.
 Calculating pH of a Buffer.
 Calculating Titration Curve pH's.

Chapter 18 sections 18.5-18.8 Assignments

The following problems will be collected at the third exam.

Review Questions: 22

Problems: 85, 88, 89, 92, 95, 97, 99, 101, 105, 109, 112

Exam Review Topics

terms

Solubility Product Constant
Ion Product, Q_c
Fractional Precipitation
Complex Ion
Ligand
Formation Constant, K_f
Dissociation Constant, K_d

skills/operations

Writing Solubility Product Expressions
Calculating K_{sp} from Solubility
Calculating Solubility from K_{sp}
Calculating Solubility in presence of Common Ion
Predicting Precipitation
Determining Effect of pH on Solubility

Chapter 19 Assignments

The following problems will be collected at the third exam.

Review Questions: 4, 12, 15, 21

Problems: 27, 35, 45, 47, 53, 55, 59, 65, 74, 78, 82

Exam Review Topics

terms

Internal Energy, U
Work
Three Laws of Thermodynamics
Enthalpy, H
Entropy, S
Free Energy, G
Thermodynamic Equilibrium Constant, K

skills/operations

Calculating the Entropy Change for Phase Transitions.
Predicting the Sign of the Entropy Change in a Reaction.
Calculating ΔS° for a Reaction.
Calculating ΔG° from ΔH° and ΔS° .
Calculating ΔG° from Standard Free Energies of Formation.
Interpreting the Sign of ΔG° .
Calculating K from the Standard Free Energy Change.
Calculating ΔG° and K at Various Temperatures.

Chapter 20 Assignments

The following problems will be collected at the fourth exam.

Review Questions: 4, 20, 31

Problems: 39, 41, 49, 53, 55, 57, 61, 66, 69, 74, 75, 87, 99, 102

Exam Review Topics

terms

oxidation/reduction
voltaic cell
electrolytic cell
half-cell
salt bridge
anode/cathode
volt
Faraday's constant
standard emf
standard electrode potential
Nernst equation
ampere

skills/operations

Sketch/label voltaic cell
Cell reaction from cell notation
Maximum work
Calculate standard cell emf
Calculate ΔG° from E°
Calculating E° from ΔG°
Calculate E_{cell} at nonstandard conditions
Calculating K from E_{cell}
Relating amount of charge and product in electrolysis

Chapter 21 Assignments

The following problems will be collected at the fourth exam

Review Questions: 5, 6, 7, 10

Problems: 31, 35, 37, 41, 45, 47, 51, 57, 60, 65, 68, 74

Exam Review Topics

terms

Radioactive decay	Electron volt
Nuclear equation	Metastable nucleus
Shell model of the nucleus	Activity
Magic numbers	Rad
Alpha emission	Rem
Beta emission	Curie
Gamma emission	Half-life
Electron capture	Decay constant
Transmutation	Binding energy
Electron volt	Fission/fusion

skills/operations

Writing nuclear equations
Deducing the product/reactant in a nuclear equation
Predicting stability of nuclides (magic numbers)
Predicting type of radioactive decay
Using notation for bombardment reactions
Calculations involving "k" and " $t_{1/2}$ "
Determining fraction of nuclei remaining
Calculating energy change for a nuclear reaction