

CHEM 2000 Reading List

Silberberg 3rd Canadian edition

Topic	Readings
1 Review: <ul style="list-style-type: none"> • Atomic Orbital Shapes • Electron Configurations • Lewis Diagrams • VSEPR 	Review: <ul style="list-style-type: none"> • Chapter 6 (section 6.4) • Chapter 7 (section 7.2) • Chapter 8 (section 8.6) • Chapter 9 (section 9.1)
2 Molecular Orbitals of Homonuclear Diatomics	Chapter 10 (“The Central Themes of MO Theory” and “Homonuclear Diatomics of Period 2 Elements” in section 10.3)
3 Molecular Orbitals of Heteronuclear Diatomics	Chapter 10 (“Two Heteronuclear Diatomic Molecules: HF and NO” in section 10.3) Chapter 22 (“Infrared Spectroscopy” in section 22.5)
4 Molecular Orbitals of Polyatomic Molecules	Chapter 10 (“Two Polyatomic Molecules: Benzene and Ozone” in section 10.3)
5A Band Theory and Bonding in Metals	Chapter 11 (“Bonding in Solids: Molecular Orbital Band Theory” in section 11.6; “Doped Semiconductors” in section 11.7)
5B Valence Bond Theory	Chapter 10 (sections 10.1 – 10.2)
6 Entropy and Free Energy	Chapter 5 (reviews prerequisite material: enthalpy) Chapter 18 (sections 18.1 – 18.3)
7 Free Energy and Equilibrium	Chapter 18 (section 18.4) Chapter 15 (sections 15.1 – 15.2, 15.4 – 15.6)
8 Effect of Temperature on Equilibrium	Chapter 11 (section 11.2)
9 Redox Reactions and Electrochemistry	Chapter 19 (sections 19.1 – 19.5)
10 Organic Molecules – Functional Groups and Stereochemistry	Chapter 20 (sections 20.1 – 20.2*, 20.4** – 20.6*)
11 Organic Reactions	Chapter 21 (sections 21.1 – 21.2, 21.3 – 21.4*** and “Electrophilic Additions”, “Acid-Catalyzed Hydration” and “Addition of Halogens” in section 21.5)
12 Organic Acids and Bases	Chapter 16 Chapter 17 (“The Henderson-Hasselbalch Equation” in section 17.1)

* Naming organic compounds (nomenclature) will not be tested in CHEM 2000

** Assigning chirality centers as R/S (Cahn-Ingold-Prelog rules) will not be tested in CHEM 2000.

*** While you are not responsible for the specific mechanisms in Sections 21.3 and 21.4, it is strongly advised that you read these two sections for the examples of nucleophiles, electrophiles and how organic chemists use ‘curly arrows’ to ‘push electrons’ in mechanisms.