Study Guide
Chapters 1, 2, 6, 16

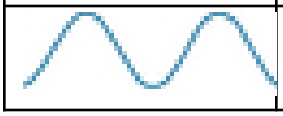
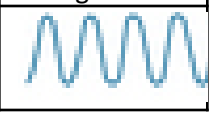
Chapter 1: Radiation History

- Know **definitions** listed in beginning of chapter, especially the following:
  - Radiation
  - X-ray
  - Radiograph
  - Image Receptor
- Study **Table 1-1** "Highlights in the History of Dental Imaging"
- Be able to identify the historical significance of this image →

- Understand the concepts of the early experimentation process, most significantly:
  - Vacuum tube
  - Fluorescence
  - Cathode rays
- Understand that modern dental radiography usually occurs digitally.

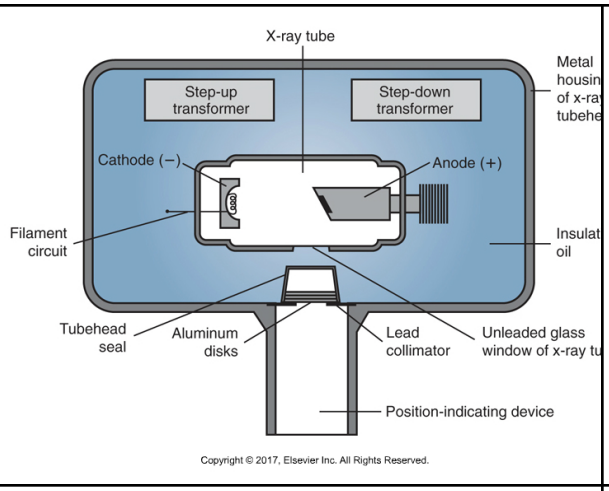
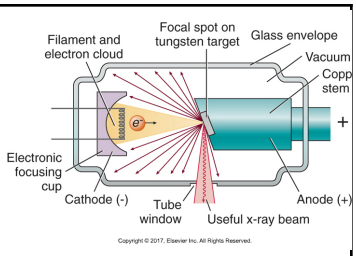
Chapter 2: Radiation Physics

- Know Key Terms:
  - Nucleus
  - Proton
  - Electron
  - Neutron
  - Electromagnetic Spectrum
  - Direct Current (DC)
  - Alternating Current (AC)
  - Amperage
  - Voltage
  - Step-down transformer
  - Step-up transformer
  - Autotransformer
  - Know the terms & concepts associated with wavelengths

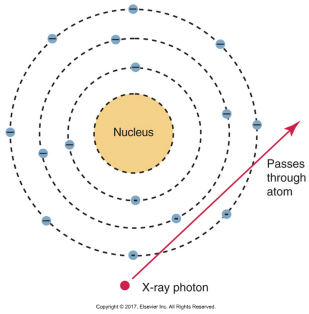
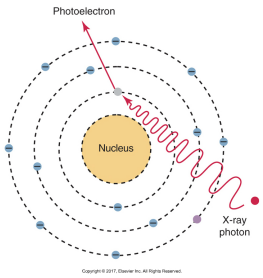
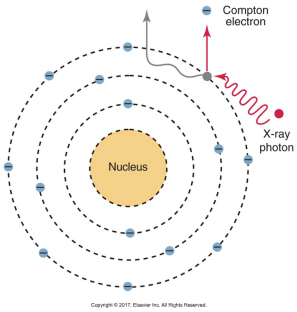
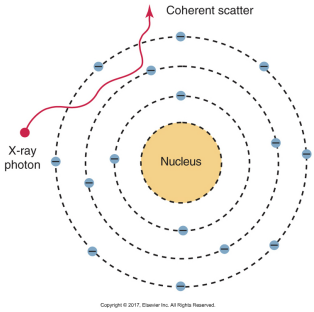
Long wavelength	Short wavelength
Low frequency	High frequency
"Long and lazy"	"Short and strong"
	

- pg 12, Box 2-1 "Properties of X-rays"
- Know the difference between the Cathode & Anode, and how a beam of x-rays are produced.
- Be able to identify & understand the parts of:

The Dental X-ray Unit	**Inside the Tube head**	**Inside the X-ray Tube**

		
Pg 13 Fig 2-11	Pg 13 Fig 2-12	Pg 14 Fig 2-17

- Be able to identify the types of Interactions of x-radiation

No Interaction	Photoelectric Effect/ "Absorption"	Compton Scatter	Coherent Scatter
			
0% of x-ray interaction that hits matter	30% of x-ray interaction that hits matter	62% of x-ray interaction that hits matter	8% of x-ray interaction that hits matter
• x-ray photon passing through an atom unchanged. • no interaction has taken place • no scatter or ionization occurs	• x-ray photon colliding with an inner shell electron. • photon is absorbed (no scatter) • a photoelectron with a negative charge is produced (ionization).	• x-ray photon colliding with an outer shell electron • ejecting the electron from its orbit (scatter). • The photon is scattered in a different direction at a lower energy level (ionization)	• x-ray photon being altered in its path (scatter); • no loss of energy occurs and the photon remains unmodified (no ionization).
No scatter	No scatter	Scatter	Scatter
No ionization	Ionization	Ionization	No ionization

Chapter 6: Dental X-Ray Equipment

- Be able to identify the component parts of x-ray equipment:
  - Tube head

    - Extension arm
    - Control panel
- Know the types of receptors in dental radiography
    - Intraoral
    - Extraoral
- Know the acronyms for:
    - BAI= beam alignment instrument
    - XCP= eXtention cone paralleling
    - PID= Position indicating device
- Know the different variables that a control panel might have
    - Time
    - kV= kilovoltage
    - mA= milliamerpage
- Understand the purpose of a collimator, and the pros & cons to its use
- Know that equipment is inspected and must pass quality control by government agencies

Chapter 16: Intro to Dental Imaging Examinations

Types of Radiographs: