# *Bushong's Radiologic Science for Technologists 13th edition Bushong Test Bank*

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# Test Bank - Chapter 01

**Q1:** Matter is measured in _____.

**A. kilograms (Correct)**
B. joules
C. electron volts
D. rems

*Rationale: Matter is measured in kilograms.*

**Q2:** Atoms and molecules are the fundamental building blocks of _____.

A. energy
B. radiation
**C. matter (Correct)**
D. gravity

*Rationale: Atoms and molecules are the fundamental building blocks of matter.*

**Q3:** Ice and steam are examples of two forms of _____.

**A. matter (Correct)**
B. radiation
C. energy
D. work

*Rationale: Ice and steam are examples of two forms of matter.*

**Q4:** The formula E = mc2 is the basis for the theory that led to the development of _____.

A. x-rays
B. electromagnetic radiation
**C. nuclear power (Correct)**
D. cathode ray tubes

*Rationale: The formula E = mc2 is the basis for the theory that led to the development of nuclear power.*

**Q5:** Radio waves, light, and x-rays are all examples of _____ energy.

A. nuclear
B. thermal
C. electrical
**D. electromagnetic (Correct)**

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*Rationale: Electromagnetic energy includes radio waves, light, and x-rays as well as other parts of the spectrum.*

**Q6:** A moving object has _____ energy.

A. potential
**B. kinetic (Correct)**
C. nuclear
D. electromagnetic

*Rationale: A moving object has kinetic energy.*

**Q7:** What is the removal of an electron from an atom called?

**A. Ionization (Correct)**
B. Pair production
C. Irradiation
D. Electricity

*Rationale: The removal of an electron from an atom is called ionization.*

**Q8:** Ionizing radiation is capable of removing _____ from atoms as it passes through the matter.

A. neutrons
B. protons
**C. electrons (Correct)**
D. ions

*Rationale: Ionizing radiation is capable of removing electrons from atoms as it passes through the matter.*

**Q9:** The energy of x-rays is _____.

A. thermal
B. potential
C. kinetic
**D. electromagnetic (Correct)**

*Rationale: X-rays are a form of electromagnetic energy.*

**Q10:** The biggest source of man-made ionizing radiation exposure to the public is _____.

A. atomic fallout
**B. diagnostic x-rays (Correct)**
C. smoke detectors
D. nuclear power plants

*Rationale: Medical x-ray exposure is the biggest source of man-made radiation.*

**Q11:** In the United States, we are exposed to _____ mSv/year of ionizing radiation from the natural environment.

**A. 0 to 5 (Correct)**
B. 5 to 20
C. 20 to 90
D. 100 to 300

*Rationale: We are exposed to about 3 mSv/yr of ionizing radiation from natural environmental sources in the United States.*

**Q12:** _____ is a special quantity of radiologic science.

A. Mass
B. Velocity
**C. Radioactivity (Correct)**
D. Momentum

*Rationale: Radioactivity is a special quantity of radiologic science.*

**Q13:** Today, radiology is considered to be a(n) _____ occupation.

**A. safe (Correct)**
B. unsafe
C. dangerous
D. high-risk

*Rationale: Today, radiology is considered to be a safe occupation because of effective radiation protection practices.*

**Q14:** What does ALARA mean?

A. All Level Alert Radiation Accident
**B. As Low As Reasonably Achievable (Correct)**
C. Always Leave A Restricted Area
D. As Low As Regulations Allow

*Rationale: ALARA means As Low As Reasonably Achievable.*

**Q15:** Computed tomography was developed in the _____.

A. 1890s
B. 1920s
**C. 1970s (Correct)**
D. 1990s

*Rationale: Computed tomography was developed in the 1970s.*

**Q16:** Filtration is used to _____.

**A. absorb low-energy x-rays (Correct)**
B. remove high-energy x-rays
C. restrict the useful beam to the body part imaged
D. fabricate gonadal shields

*Rationale: Filtration is used to absorb low-energy x-rays.*

**Q17:** Mass is the quantity of matter as described by its energy equivalence.

**A. True (Correct)**
B. False

*Rationale: Mass is the quantity of matter as described by its energy equivalence.*

**Q18:** Radiation is the removal of an electron from an atom.

A. True
**B. False (Correct)**

*Rationale: Ionization is the removal of an electron from an atom.*

**Q19:** Radiology emerged as a medical specialty because of the Snook transformer and the Crookes x-ray tube.

A. True
**B. False (Correct)**

*Rationale: Radiology emerged as a medical specialty because of the Snook transformer and the Coolidge x-ray tube.*

# Student Review Questions - Chapter 01

**Q1:** Ionization is the removal of a(n) _____ from an atom.

**A. electron (Correct)**
B. proton
C. neutron
D. atom

*Rationale: Ionization is the removal of an electron from an atom.*

**Q2:** Which type of energy is the energy of motion at the molecular level?

A. Kinetic energy
B. Chemical energy
**C. Thermal energy (Correct)**
D. Nuclear energy

*Rationale: Thermal energy (heat) is the energy of motion at the molecular level.*

**Q3:** Which type of energy is the energy released by a chemical reaction?

A. Kinetic energy
**B. Chemical energy (Correct)**
C. Thermal energy
D. Nuclear energy

*Rationale: Chemical energy is the energy released by a chemical reaction.*

**Q4:** _____ is the transfer of energy.

A. Heat
**B. Radiation (Correct)**
C. Potential energy
D. Ionization

*Rationale: Radiation is the transfer of energy.*

**Q5:** Natural environmental radiation includes which of the following?

A. Terrestrial radiation
B. Cosmic rays
C. Radon
**D. All options are correct (Correct)**

*Rationale: Natural environmental radiation includes terrestrial radiation, cosmic rays, and radon.*

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**Q6:** Which of the following is the largest source of natural environmental radiation?

A. X-rays
**B. Radon (Correct)**
C. Internally deposited radionuclides
D. Cosmic rays

*Rationale: Radon is the largest source of natural environmental radiation.*

**Q7:** Which of the following is the largest source of human-made radiation?

**A. X-rays (Correct)**
B. Radon
C. Internally deposited radionuclides
D. Cosmic rays

*Rationale: X-rays are the largest source of human-made radiation.*

**Q8:** What percentage of our annual average radiation dose is attributable to medical imaging?

A. 25%
B. 33%
**C. 48% (Correct)**
D. 73%

*Rationale: 48% of our annual average radiation dose is attributable to medical imaging.*

**Q9:** X-rays are _____ penetrating, invisible rays that are a form of _____ radiation.

A. slightly; mechanical
B. slightly; electromagnetic
**C. highly; electromagnetic (Correct)**
D. highly; mechanical

*Rationale: X-rays are highly penetrating, invisible rays that are a form of electromagnetic radiation.*

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