

**Chapter 01: Introduction to Radiography**  
**Ehrlich: Patient Care in Radiography: With an Introduction to Medical Imaging, 10th Edition**

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**MULTIPLE CHOICE**

1. X-rays were discovered in 1895 by
- Coolidge.
  - Crookes.
  - Roentgen.
  - Edison.

ANS: C                      REF: p. 2                      OBJ: 1

2. Of the following types of electromagnetic energy, which has the shortest wavelength?
- Radio waves
  - X-rays
  - Visible light
  - Ultraviolet light

ANS: B                      REF: p. 7                      OBJ: 7

3. Which of the following is *not* an accurate statement regarding the characteristics of x-rays?
- They can penetrate matter that is impenetrable to light.
  - They cause certain crystals to fluoresce.
  - They can be refracted by a lens.
  - They cannot be detected by the human senses.

ANS: C                      REF: p. 7 | p. 8                      OBJ: 8

4. An electron cloud surrounding a hot cathode is referred to as a(n)
- focusing cup.
  - ampere.
  - space charge.
  - filament.

ANS: C                      REF: p. 6                      OBJ: 6

5. The purpose of rotating the x-ray tube target is to
- create a space charge.
  - remove long-wavelength photons from the x-ray beam.
  - focus the electron stream on a small target area.
  - increase the heat capacity of the anode.

ANS: D                      REF: p. 9                      OBJ: 6

6. An imaginary photon that is emitted from the center of the focal spot, perpendicular to the long axis of the x-ray tube, is called the
- electron stream.
  - x-ray beam.
  - central ray.

d. radiation field.

ANS: C                    REF: p. 8                    OBJ: 10

7. A device used to control the size of the radiation field is a
- collimator.
  - detent.
  - tube housing.
  - filter.

ANS: A                    REF: p. 8                    OBJ: 11

8. The function of an x-ray grid is to
- decrease patient radiation dose.
  - increase radiographic resolution.
  - increase radiographic contrast by reducing scatter radiation fog.
  - increase radiographic density.

ANS: C                    REF: p. 14                    OBJ: 11

9. The majority of radiography education programs today are based in
- proprietary schools.
  - hospitals.
  - clinics.
  - colleges.

ANS: D                    REF: p. 4                    OBJ: 3

10. The container for the vacuum of the x-ray tube is made of
- glass.
  - aluminum.
  - tungsten.
  - carbon.

ANS: A                    REF: p. 5                    OBJ: 4

11. X-rays are a type of
- electricity.
  - microwave.
  - kinetic energy.
  - electromagnetic energy.

ANS: D                    REF: p. 6                    OBJ: 7

12. The frequency of an electromagnetic sine wave is defined as
- the distance from trough to crest.
  - the distance from one crest to the next.
  - the number of times per second that a crest passes a given point.
  - the velocity at which the wave travels through space.

ANS: C                    REF: p. 6                    OBJ: 9

13. Which formula represents the relationship between the wavelength, frequency, and velocity of an electromagnetic wave?
- a.  $f = \lambda \times v$
  - b.  $V = \lambda \times f$
  - c.  $A = f \div v$
  - d.  $f = \lambda \div v$

ANS: B                      REF: p. 6                      OBJ: 9

14. Which of the following substances is most readily penetrated by x-rays?
- a. Water
  - b. Air
  - c. Bone
  - d. Fat

ANS: B                      REF: p. 7                      OBJ: 8

15. Grids or buckys are generally used for body parts that measure greater than
- a. 2 to 4 cm.
  - b. 10 to 12 cm.
  - c. 18 to 20 cm.
  - d. 30 cm.

ANS: B                      REF: p. 15                      OBJ: 11

16. The access point for the radiographer to determine the exposure factors and to initiate the exposure is called the
- a. transformer.
  - b. image receptor unit.
  - c. control console.
  - d. stationary grid.

ANS: C                      REF: p. 16                      OBJ: 11

17. An x-ray machine designed for direct viewing of the x-ray image is called a(n)
- a. image receptor.
  - b. transformer.
  - c. control console.
  - d. fluoroscope.

ANS: D                      REF: p. 17                      OBJ: 11

18. A device located between the x-ray tube and the control panel that increases the voltage delivered from the power company is called a
- a. collimator.
  - b. transformer.
  - c. control console.
  - d. fluoroscope.

ANS: B                      REF: p. 16                      OBJ: 11

19. The anode or positive end of the x-ray tube is the end that contains the

