

**MULTIPLE CHOICE**

1. X-rays were discovered in 1895 by:
- a. Coolidge.
  - b. Crookes.
  - c. Roentgen.
  - d. Edison.

ANS: C            REF: p. 2            OBJ: 1

2. Of the following types of electromagnetic energy, which has the shortest wavelength?
- a. Radio waves
  - b. X-rays
  - c. Visible light
  - d. 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?
- a. They can penetrate matter that is impenetrable to light.
  - b. They cause certain crystals to fluoresce.
  - c. They can be refracted by a lens.
  - d. They cannot be detected by the human senses.

ANS: C            REF: pp. 7-8            OBJ: 8

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

ANS: C            REF: p. 6            OBJ: 6

5. The purpose of rotating the x-ray tube target is to:
- a. create a space charge.
  - b. remove long-wavelength photons from the x-ray beam.
  - c. focus the electron stream on a small target area.
  - d. 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:
- a. electron stream.
  - b. x-ray beam.
  - c. 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:
- a. collimator.
  - b. detent.
  - c. tube housing.
  - d. filter.

ANS: A            REF: p. 8            OBJ: 11

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

ANS: C            REF: p. 14            OBJ: 11

9. The majority of radiography education programs today are based in:
- a. proprietary schools.
  - b. hospitals.
  - c. clinics.
  - d. colleges.

ANS: D            REF: p. 4            OBJ: 3

10. The container for the vacuum of the x-ray tube is made of:

- a. glass.
- b. aluminum.
- c. tungsten.
- d. carbon.

ANS: A            REF: p. 5            OBJ: 4

11. X-rays are a type of:

- a. electricity.
- b. microwave.
- c. kinetic energy.
- d. electromagnetic energy.

ANS: D            REF: p. 6            OBJ: 7

12. The frequency of an electromagnetic sine wave is defined as:

- a. the distance from trough to crest.
- b. the distance from one crest to the next.
- c. the number of times per second that a crest passes a given point.
- d. the velocity at which the wave travels through space.

ANS: C            REF: p. 6            OBJ: 9

13. Which of the following formulas represents the relationship between the wavelength, frequency, and velocity of an electromagnetic wave?

- a.  $f = \lambda \times v$
- b.  $V = \lambda \times f$
- c.  $\lambda = f \div v$
- 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:

- a. target.
- b. filament.
- c. focusing cup.
- d. space charge.

ANS: A            REF: p. 6            OBJ: 5

20. The inventor of the fluoroscope, who also investigated hundreds of fluorescent materials, was:

- a. Coolidge.
- b. Pupin.
- c. Roentgen.
- d. Edison.

ANS: D                    REF: p. 3                    OBJ: 2

21. The inventor of the hot cathode x-ray tube, the prototype of the x-ray tubes of today, was:

- a. Coolidge.
- b. Pupin.
- c. Roentgen.
- d. Edison.

ANS: A                    REF: p. 3                    OBJ: 2