

MULTIPLE CHOICE

1. Diagnostic ultrasound transducers generate a _____ of sound into the body.
 - a. wave
 - b. pulse
 - c. frequency
 - d. Doppler

ANS: B

Diagnostic ultrasound transducers generate the ultrasound pulses and receive the returning pulses.

REF: p. 2 OBJ: Explain the fundamental principle used in sonographic imaging.
TOP: Pulse wave

2. The brightness of the dot corresponds to the _____ of the returning echo.
 - a. location
 - b. speed
 - c. strength
 - d. angle

ANS: C

The brightness of the dot corresponds to the echo strength, producing what then is known as a gray-scale image.

REF: pp. 2-5 OBJ: Explain the fundamental principle used in sonographic imaging.
TOP: Pulse wave

3. A rectangular image display is seen when using a _____ transducer.
 - a. sector
 - b. vector
 - c. convex
 - d. linear

ANS: D

Pulses (scan lines) travel from different points parallel with each other, displaying a rectangular image.

REF: p. 5 OBJ: Describe the image formats used in sonography.
TOP: Pulse wave

4. The location of each dot corresponds to the _____ of the echo to return.
 - a. strength
 - b. time
 - c. pulse
 - d. frequency

ANS: B

The location of each dot corresponds to the anatomic location of the echo-generating structure.

REF: p. 5 OBJ: Explain the fundamental principle used in sonographic imaging.
TOP: Pulse wave

5. The method by which each pulse originates from the same starting point is called a _____ image.
- a. sector
 - b. linear
 - c. convex
 - d. none of the above

ANS: A

A sector image results when each pulse originates from the same starting point and subsequent pulses going out in different directions.

REF: p. 5 OBJ: Describe the image formats used in sonography.
TOP: Pulse wave

6. Sonographic images are composed of many _____.
- a. crystals
 - b. scan lines
 - c. focal points
 - d. frequency shifts

ANS: B

Sonographic images are composed of many scan lines (pulses).

REF: p. 7 OBJ: Explain the fundamental principle used in sonographic imaging.
TOP: Pulse wave

7. Echoes produced by _____ objects have different _____ than the pulses sent into the body.
- a. stationary; frequencies
 - b. stable; directions
 - c. moving; frequencies
 - d. moving; echoes

ANS: C

Echoes produced by moving objects have different frequencies than the pulses sent into the body.

REF: p. 7 OBJ: Explain how the Doppler effect is applied to sonography.
TOP: Doppler ultrasound

8. Doppler ultrasound measures the movement of _____.
- a. tissue
 - b. blood
 - c. A and B
 - d. none of the above

ANS: C

Doppler ultrasound is used in detecting and measuring tissue motion and blood flow.

REF: p. 7 OBJ: Explain how the Doppler effect is applied to sonography.

TOP: Doppler ultrasound

9. Quantitative data are determined by which Doppler display?

- a. Color imaging.
- b. Power imaging.
- c. B-mode (gray-scale, or brightness) imaging.
- d. Spectral imaging.

ANS: D

Doppler information is applied to loudspeakers for audible evaluation and to the spectral display for quantitative analysis.

REF: p. 8 OBJ: List the ways in which Doppler information is presented.

TOP: Doppler ultrasound

10. The Doppler effect is a change in echo _____.

- a. frequency
- b. strength
- c. amplitude
- d. direction

ANS: A

The Doppler effect is a change in frequency caused by moving objects.

REF: p. 7 OBJ: Explain how the Doppler effect is applied to sonography.

TOP: Doppler ultrasound

11. Vertical parallel scan lines are seen with which transducer format?

- a. vector.
- b. convex.
- c. linear.
- d. curvilinear.

ANS: C

A linear transducer generates vertical parallel scan lines.

REF: p. 5 OBJ: Describe the image formats used in sonography.

TOP: Pulse wave

12. A gray-scale ultrasound image is the visible counterpart of a/an _____.

- a. frequency shift
- b. spectral display
- c. invisible object
- d. electronic wave

ANS: C

An ultrasound image is the visible counterpart of an invisible object, produced in an electronic instrument by the interaction of ultrasound with the object.

REF: pp. 1-2 OBJ: Explain the fundamental principle used in sonographic imaging.
TOP: Pulse wave

13. A _____ scan is shaped like a slice of pie.
- sector
 - convex
 - linear
 - curvilinear

ANS: A

A sector image is shaped like a slice of pie.

REF: p. 5 OBJ: Describe the image formats used in sonography.
TOP: Pulse wave

14. Sonography is medical anatomic imaging using a _____ technique.
- starting point
 - pulse echo
 - vertical parallel
 - transducer instrument

ANS: B

Anatomic imaging with ultrasound is accomplished by the pulse-echo principle.

REF: p. 2 OBJ: Explain the fundamental principle used in sonographic imaging.
TOP: Pulse wave

15. Three-dimensional imaging requires many adjacent tissue _____ to build the image.
- moving objects
 - frequency shifts
 - cross-sections
 - ultrasound pulses

ANS: C

Three-dimensional, or volume, imaging requires scanning the ultrasound through many adjacent two-dimensional tissue-cross-sections to build up a three-dimensional volume of echo information.

REF: p. 7 OBJ: Describe the image formats used in sonography.
TOP: Pulse wave

TRUE/FALSE

1. One pulse of ultrasound generates a single scan line as it travels through tissue.

ANS: T

One line of echo information (pulse) is equal to one scan line.

REF: p. 5 OBJ: Explain the fundamental principle used in sonographic imaging.
TOP: Pulse wave

2. Pulsed ultrasound transducers can generate only ultrasound pulses.

ANS: F

The transducer generates the ultrasound pulses and receives the returning echoes.

REF: p. 2

OBJ: Explain the fundamental principle used in sonographic imaging.

TOP: Pulse wave

3. The Doppler effect is caused by a difference in the depth of two moving objects.

ANS: F

The Doppler effect is a change in frequency caused by moving objects.

REF: p. 7

OBJ: Explain how the Doppler effect is applied to sonography.

TOP: Doppler ultrasound

4. Animals have applied ultrasound to detect and capture prey.

ANS: T

Bats, dolphins, and other animals use ultrasound to detect, locate, determine motion of, and capture prey; to avoid obstacles; to detect and avoid predators; and to court mates.

REF: p. 1

OBJ: Explain the fundamental principle used in sonographic imaging.

TOP: General ultrasound physics

5. Color Doppler imaging is superimposed on a gray-scale image.

ANS: T

Rapid scanning and processing of the Doppler data enable color-coded presentation of Doppler information to be superimposed on a gray-scale anatomic image.

REF: pp. 7-8

OBJ: Explain how the Doppler effect is applied to sonography.

TOP: Doppler ultrasound