



Professional Ultrasound Services

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Soft Tissue Interactions

1. The dissipation of ultrasound energy due to the re-direction of the beam in many different directions is called:
 - a. Diffraction
 - b. Divergence
 - c. Refraction
 - d. Scattering
2. The reflection coefficient (the ratio of sound reflected to sound transmitted) at an interface is most closely related to:
 - a. Difference in acoustic impedance at the interface
 - b. Difference in attenuation at the interface
 - c. Incident beam intensity
 - d. Average attenuation in the medium
3. The relative increase in echogenicity behind a fluid collection is called:
 - a. Refraction
 - b. Posterior acoustic shadowing
 - c. Hyperattenuation
 - d. Posterior acoustic enhancement
4. Focal areas of echo drop-out in a sonographic image found along the edges of a curved anatomical structure are called:
 - a. Reverberatory artifact
 - b. Operator error due to improper gain settings
 - c. Refractory artifact
 - d. Side lobe artifact
5. All of the following phenomena contribute to the process of attenuation except:
 - a. Particle displacement
 - b. Refraction
 - c. Absorption
 - d. Scattering
6. The speed of ultrasound in human soft tissue most closely approximates:
 - a. 13 μ s/m
 - b. 13 μ s/cm
 - c. 13 μ s/mm
 - d. 13 μ s/inch
7. The transmission coefficient is best defined as:
 - a. $T = 1 - R$
 - b. $T = R - 1$
 - c. $T = .5 \text{ dB/cm/MHz}$
 - d. $T = vt$

8. Intense ultrasound beams that can generate tiny bubbles from dissolved gases in fluid are said to be creating:
 - a. Heating
 - b. Absorption
 - c. Scattering
 - d. Cavitation
9. The mean attenuation coefficient of ultrasound in human soft tissue is approximately:
 - a. 13 dB/cm/MHz
 - b. 13 μ B/cm/MHz
 - c. 13 μ s/cm
 - d. 0.5 dB/cm/MHz
10. Experiments done in living organisms that are designed to assess the biological effect of high doses of ultrasound energy are called:
 - a. *in vivo*
 - b. *in vitro*
 - c. Empirical
 - d. Organic
11. The method of determining absolute pressure in a sound wave when conducting bioeffects studies uses a:
 - a. AIUM 100mm test object
 - b. Tissue equivalent phantom
 - c. Densitometer
 - d. Hydrophone
12. The area of the maximum temperature rise in tissue being exposed to ultrasound energy will be found:
 - a. At the focal point of the beam
 - b. Between the focal point and the transducer face
 - c. At the transducer face
 - d. Distal to the focal point
13. Wavelength of a sound beam is measured in units of:
 - a. Time
 - b. Frequency
 - c. Intensity
 - d. Distance
14. The units of measurement for pulse repetition frequency is:
 - a. Hertz
 - b. Watts
 - c. Rayls
 - d. μ s
15. When an ultrasound pulse encounters a medium that has the same acoustic impedance as the medium through which it has been traveling, what type of reflection will occur?
 - a. Specular
 - b. Diffuse
 - c. Non-specular
 - d. No reflection will occur

16. The velocity of ultrasound in human soft tissue most closely approximates:
- a. 1540 cm/sec
 - b. 1540 m/sec
 - c. 1.54 mm/sec
 - d. 15,400 mm/sec
17. Audible sound is defined as sound with a frequency of:
- a. < 20 Hertz
 - b. > 20,000 Hertz
 - c. 200-2,000 Hertz
 - d. 20 – 20,000 Hertz