

ARDMS SPI Exam Assessment: Sonography Principles and Instrumentation - RealExamFree 100% Pass For Sure



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ARDMS SPI Exam Syllabus Topics:

Topic	Details
Topic 1	• Perform Ultrasound Examinations: This topic discusses patient care, sonographic ergonomic techniques, echogenicity, reverberation, and potential bioeffects. It also discusses beam steering concepts, panoramic imaging, 3D • 4D concepts, and contrast imaging concepts.
Topic 2	• Optimize Sonographic Images: The topic focuses on optimization of axial resolution concepts, optimization of lateral resolution concepts, optimization of elevational resolution concepts, optimization of temporal resolution concepts, and magnification techniques.
Topic 3	• Provide Clinical Safety & Quality Assurance: This topic covers universal infection control protocols, QA check on ultrasound machine, transducer integrity, ultrasound machine integrity, and statistical parameter concepts.
Topic 4	• Manage Ultrasound Transducers: It delves into 2D array transducer concepts, 3D • 4D transducer concepts, and nonimaging transducer concepts.
Topic 5	• Apply Doppler Concepts: It discusses Doppler wall filter concepts, Doppler sample gate concepts, y color priority over gray scale concepts, and concepts related to color Doppler map. Furthermore, it discusses concepts to eliminate aliasing, continuous wave Doppler concepts, and color Doppler scale concepts.

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ARDMS Sonography Principles and Instrumentation Sample Questions (Q125-Q130):

NEW QUESTION # 125

Which adjustment can maintain the same frame rate when the depth is increased?

- A. Increase frequency
- B. Decrease persistence
- **C. Decrease image width**
- D. Increase number of focal zones

Answer: C

Explanation:

When the depth of imaging is increased, the time it takes for the ultrasound pulses to travel to and from the deeper structures also increases, which can reduce the frame rate. To maintain the same frame rate, one effective adjustment is to decrease the image width. Narrowing the image width reduces the number of scan lines required to create each frame, allowing the system to maintain a higher frame rate despite the increased depth.

ARDMS Sonography Principles and Instrumentation guidelines

Krenkau, F. W. (2015). Diagnostic Ultrasound: Principles and Instruments.

NEW QUESTION # 126

Which will affect the gray-scale of a 2-D image?

- A. Depth of field
- **B. Dynamic range**
- C. Pulse repetition frequency (PRF)
- D. Doppler gain

Answer: B

Explanation:

Dynamic range in ultrasound imaging affects the number of gray shades displayed in a 2-D image. Adjusting the dynamic range changes how echo signals are mapped to grayscale. A higher dynamic range means more shades of gray are displayed, providing a more detailed and softer image, which is useful for differentiating subtle tissue textures. Conversely, a lower dynamic range increases contrast by displaying fewer shades of gray, making the image appear more black and white. This adjustment is crucial for optimizing image quality based on the specific diagnostic needs.

Reference:

American Registry for Diagnostic Medical Sonography (ARDMS). Sonography Principles and Instrumentation (SPI) Examination Review Guide.

NEW QUESTION # 127

Which resolution is degraded when utilizing multiple transmit focal zones?

- **A. Temporal**
- B. Lateral
- C. Elevational
- D. Axial

Answer: A

Explanation:

When utilizing multiple transmit focal zones, the ultrasound system must perform multiple transmissions at each focal depth. This process requires more time for data acquisition, which in turn decreases the frame rate.

A lower frame rate directly impacts temporal resolution, which is the ability to accurately depict moving structures over time. Thus, using multiple focal zones improves lateral resolution but degrades temporal resolution.

References:

American Registry for Diagnostic Medical Sonography (ARDMS) Sonography Principles and Instrumentation guidelines.

NEW QUESTION # 128

What produces increased attenuation within soft tissue?

- A. Higher intensity of the ultrasound beam
- B. Lower frequency of the ultrasound beam
- C. Lower intensity of the ultrasound beam
- D. Higher frequency of the ultrasound beam

Answer: D

Explanation:

Attenuation refers to the reduction in the intensity of the ultrasound beam as it travels through tissue. Higher frequency ultrasound beams experience more attenuation because they are absorbed and scattered more than lower frequency beams. This is due to the fact that higher frequency waves have shorter wavelengths and interact more with the small particles in tissues, causing greater energy loss.

References:ARDMS Sonography Principles and Instrumentation, Chapter on Ultrasound Physics and Instrumentation.

NEW QUESTION # 129

What is the primary factor that improves lateral resolution?

- A. Frame rate
- B. Frequency
- C. Beamwidth
- D. Propagation speed

Answer: C

Explanation:

Lateral resolution refers to the ability of the ultrasound system to distinguish two structures that are side by side, perpendicular to the direction of the sound beam. This resolution is primarily improved by reducing the beamwidth. A narrower beamwidth allows for better differentiation between adjacent structures, enhancing the lateral resolution. Higher frequency transducers can also help achieve a narrower beamwidth, but beamwidth is the primary factor.

Reference:

ARDMS Sonography Principles & Instrumentation Guidelines

Hagen-Ansert SL. Textbook of Diagnostic Ultrasonography. 8th ed. St. Louis, MO: Mosby; 2017.

NEW QUESTION # 130

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By evaluating your shortcomings, you can gradually improve without losing anything in the Sonography Principles and Instrumentation (SPI) exam. You can take our customizable SPI practice test multiple times, and as a result, you will get better results each time you progress and cover the topics of the real SPI test. The software is compatible with Windows so you can run it easily on your computer.

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