

Latest ARDMS SPI: Sonography Principles and Instrumentation Valid Braindumps Questions - Authoritative ActualTestsIT SPI Pass Test

ARDMS SPI (Sonography Principles and Instrumentation) Practice Exam 2025 – Questions and Correct Answers and Detailed Rationales

1. What is the primary determinant of axial resolution in ultrasound imaging?

- A. Pulse repetition frequency
- B. Spatial pulse length**
- C. Transducer diameter
- D. Frame rate

Rationale: Axial resolution is determined by the spatial pulse length (SPL). The shorter the SPL, the better the axial resolution.

2. Which artifact results from sound reflecting off a strong reflector and being redirected back into the body?

- A. Reverberation
- B. Mirror image**
- C. Shadowing
- D. Ring down

Rationale: A mirror image artifact occurs when a strong reflector (like the diaphragm) redirects sound, creating a duplicated structure.

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ARDMS SPI Exam Syllabus Topics:

Topic	Details
Topic 1	<ul style="list-style-type: none"> • Perform Ultrasound Examinations: This section of the exam measures skills of Sonographers and covers how to conduct ultrasound procedures while ensuring patient safety and diagnostic accuracy. It includes understanding of imaging protocols, ergonomics, patient care, and the interaction between sound and tissue. Candidates are expected to demonstrate abilities to manage patient encounters, apply 3D and 4D and contrast imaging concepts, identify and correct artifacts, and follow confidentiality and privacy standards throughout the scanning process.
Topic 2	<ul style="list-style-type: none"> • Provide Clinical Safety and Quality Assurance: This section of the exam measures skills of Clinical Ultrasound Supervisors and focuses on maintaining safety and quality standards in ultrasound practice. It includes infection control protocols, transducer and machine integrity checks, and quality assurance testing using tissue-mimicking phantoms. The section also requires familiarity with statistical parameters like sensitivity and specificity to evaluate diagnostic performance and ensure consistent, reliable imaging outcomes.
Topic 3	<ul style="list-style-type: none"> • Manage Ultrasound Transducers: This section of the exam measures skills of Ultrasound Technicians and focuses on the management and proper use of different types of transducers. It evaluates knowledge of transducer components, frequency selection, and application of various 2D, 3D, 4D, and nonimaging transducer concepts. Candidates must show they can choose the appropriate transducer for specific examinations and make necessary frequency adjustments to ensure image quality.
Topic 4	<ul style="list-style-type: none"> • Optimize Sonographic Images: This section of the exam measures skills of Diagnostic Medical Sonographers and assesses their ability to enhance image quality using advanced optimization techniques. It includes understanding axial, lateral, elevational, and temporal resolution, as well as manipulating gain, depth, magnification, and dynamic range. Examinees are expected to apply harmonic imaging, spatial compounding, and gray-scale techniques to produce clear, accurate diagnostic images.
Topic 5	<ul style="list-style-type: none"> • Apply Doppler Concepts: This section of the exam measures skills of Vascular Sonographers and evaluates understanding and application of Doppler ultrasound principles. It includes knowledge of Doppler angle, flow dynamics, and color and spectral Doppler imaging. The section also covers eliminating aliasing, interpreting waveforms, applying continuous and pulsed wave Doppler, and optimizing Doppler gain and scale to accurately measure blood flow and velocity within vessels.

ARDMS Sonography Principles and Instrumentation Sample Questions (Q75-Q80):

NEW QUESTION # 75

How can spectral Doppler cross talk be reduced?

- A. By increasing the Doppler pulse repetition frequency (PRF)
- B. By adjusting the Doppler baseline
- C. By decreasing the Doppler gain
- D. By decreasing the Doppler wall filter

Answer: C

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

Cross talk (spectral mirror artifact) appears as a duplication of the spectral waveform above and below the baseline. One primary cause is excessive Doppler gain, which amplifies weak signals and noise symmetrically. Reducing gain minimizes this artifact.

Principles and Instrumentation state:

"Cross talk in spectral Doppler may result from high gain settings. Lowering the gain can reduce or eliminate this artifact." PRF adjustments affect aliasing, not cross talk.
Baseline shifts affect waveform positioning.
Wall filter affects low-frequency signals but not cross talk.
Therefore, the correct answer is A: By decreasing the Doppler gain.

NEW QUESTION # 76

Which color control was adjusted in color bar A to produce color bar B?



- A. Scale
- B. Baseline
- C. Invert
- D. Map

Answer: A

Explanation:

The color bar on a Doppler ultrasound display indicates the range of velocities that the system can detect and display. In color bar A, the scale is set to a higher maximum velocity (64 cm/s), while in color bar B, the scale is set to a lower maximum velocity (16 cm/s). Adjusting the scale (or velocity range) changes the upper and lower limits of the velocities displayed, which affects the sensitivity of the Doppler system to detect flow velocities. Lowering the scale allows for better visualization of lower velocities, but it may also increase the likelihood of aliasing for higher velocities.

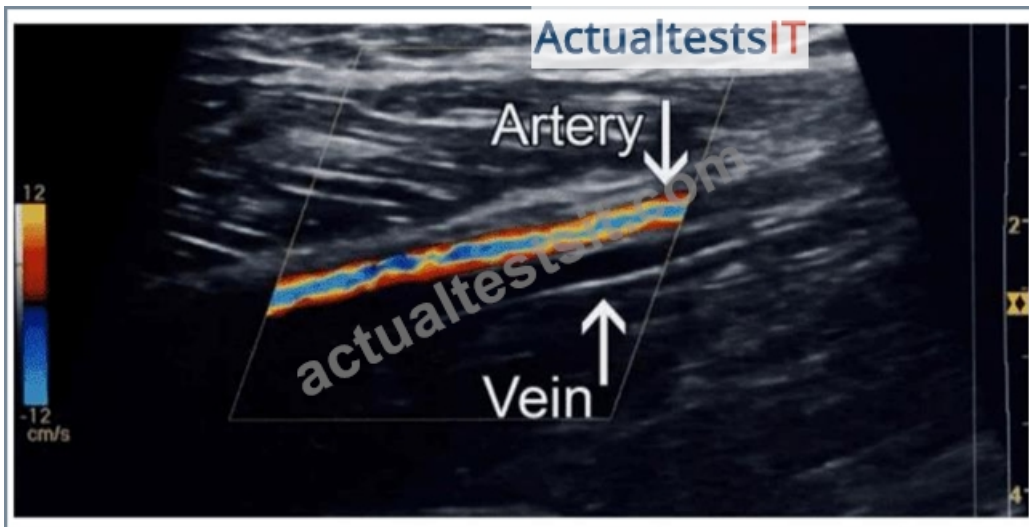
Reference:

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

NEW QUESTION # 77

Which color Doppler setting adjustment would likely demonstrate color flow in the normal vein seen in this image?

An ultrasound image of veins and veins Description automatically generated



- A. Increasing persistence
- B. Increasing scale
- C. Decreasing scale
- D. Decreasing persistence

Answer: C

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

Veins generally exhibit low-velocity flow. The color scale (or velocity range) must be low enough to detect these slow flows.

Decreasing the scale lowers the Nyquist limit, allowing the machine to display lower velocities that may otherwise be undetectable.

Principles and Instrumentation state:

"Reducing the scale increases sensitivity to low-velocity flows such as venous flow, while high scales may suppress these signals."

Therefore, the correct answer is A: Decreasing scale.

NEW QUESTION # 78

Which control determines the amount of amplification occurring in the receiver?

- A. Dynamic range
- B. Persistence
- C. Output power
- D. Overall gain

Answer: D

Explanation:

Overall gain controls the amplification of all the received ultrasound signals uniformly. This adjustment affects the brightness of the entire image by increasing or decreasing the amplification of the echoes returning from all depths. It is a primary control for adjusting image brightness. The overall gain should be set to an appropriate level to ensure that the ultrasound image is neither too bright (over-gained) nor too dark (under-gained), allowing for optimal visualization of the anatomical structures.

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

NEW QUESTION # 79

How is an ultrasound image affected if several adjacent crystals of a linear array transducer are damaged?

- A. Loss of entire image
- B. Vertical dark zone directly below the damaged elements
- C. Horizontal zone of dropout
- D. Erratic beam steering and focusing

Answer: B

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

In linear array transducers, each element controls a vertical portion of the image. If adjacent elements fail, the result is a vertical dropout corresponding directly below the damaged crystals.

According to sonography instrumentation reference:

"Damage to specific elements in a linear array transducer results in vertical dropout directly beneath the malfunctioning crystals." Therefore, the correct answer is A: Vertical dark zone directly below the damaged elements.

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NEW QUESTION # 80

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