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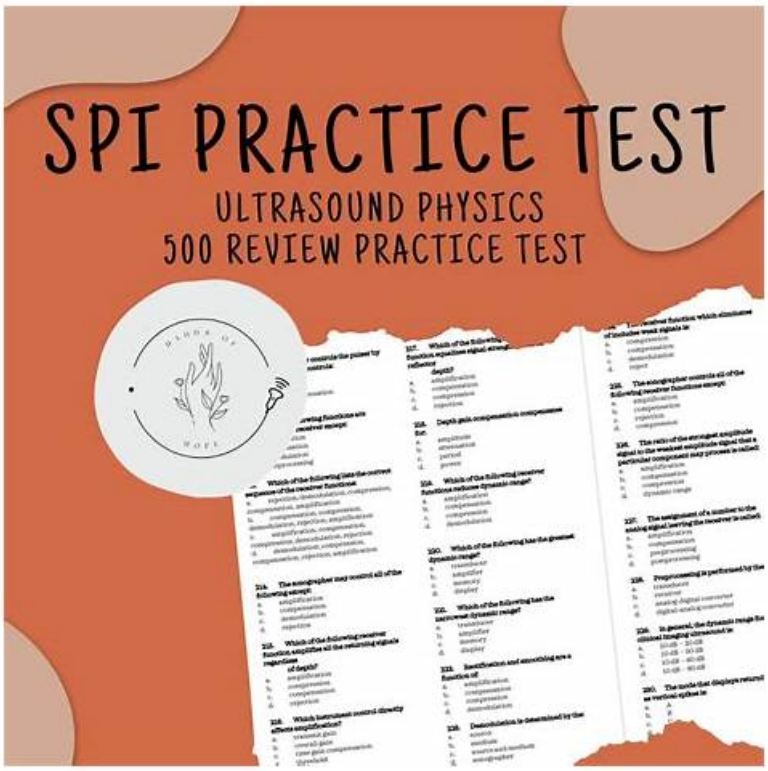

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ARDMS SPI Exam Syllabus Topics:

Topic	Details
Topic 1	• 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 2	• 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.
Topic 3	• 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	• 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 • 4D and contrast imaging concepts, identify and correct artifacts, and follow confidentiality and privacy standards throughout the scanning process.
Topic 5	• 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.

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ARDMS Sonography Principles and Instrumentation Sample Questions (Q196-Q201):

NEW QUESTION # 196
What is the purpose of applying compression to the received signals?

- A. Decrease the spatial pulse length
- B. Decrease the frame rate
- C. Reduce the field of view
- D. Reduce the dynamic range

Answer: D

Explanation:
Comprehensive and Detailed Explanation From Exact Extract:
The primary purpose of compression is to reduce the dynamic range of received echoes, making the image more visually interpretable by adjusting contrast without losing diagnostic information.
According to sonography instrumentation reference:
"Compression reduces the dynamic range of the signal amplitudes to fit within the display range of the monitor while preserving important differences in tissue echogenicity." Therefore, the correct answer is D: Reduce the dynamic range.
-

NEW QUESTION # 197
Which feature is a characteristic of continuous wave Doppler?

- A. Aliasing
- B. Dedicated transmit and receive crystals
- C. Low thermal index
- D. Range specificity

Answer: B

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:
Continuous wave (CW) Doppler utilizes two separate crystals: one constantly transmitting and one constantly receiving. This setup allows CW Doppler to measure very high velocities without aliasing, but at the cost of losing range specificity (no depth resolution).
According to sonography instrumentation reference:
"Continuous wave Doppler uses two separate elements for continuous transmission and reception of sound waves, allowing for detection of very high velocities but without depth specificity." Therefore, the correct answer is D: Dedicated transmit and receive crysta

NEW QUESTION # 198
Which will affect the gray-scale of a 2-D image?

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

Answer: C

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 # 199
What is the term for an ultrasound system's ability to display low-level echoes?

- A. Slice thickness
- B. Axial resolution
- C. Lateral resolution
- D. Sensitivity

Answer: D

Explanation:
Sensitivity is the term for an ultrasound system's ability to display low-level echoes. It refers to the system's capacity to detect and accurately display weak echoes returning from tissues. High sensitivity allows the sonographer to visualize structures that produce faint echoes, such as small or low-contrast lesions. This parameter is critical for ensuring that subtle pathological changes are not missed during imaging.References:
* ARDMS Sonography Principles and Instrumentation guidelines
* "Sonography: Principles and Instruments" by Joan P. Baker and Marveen Craig

NEW QUESTION # 200
What is the term for an ultrasound system's ability to display low-level echoes?

- A. Slice thickness
- B. Axial resolution
- C. Lateral resolution
- D. Sensitivity

Answer: D

Explanation:
Sensitivity is the term for an ultrasound system's ability to display low-level echoes. It refers to the system's capacity to detect and

accurately display weak echoes returning from tissues. High sensitivity allows the sonographer to visualize structures that produce faint echoes, such as small or low-contrast lesions. This parameter is critical for ensuring that subtle pathological changes are not missed during imaging. Reference:
ARDMS Sonography Principles and Instrumentation guidelines
"Sonography: Principles and Instruments" by Joan P. Baker and Marveen Craig

NEW QUESTION # 201
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