

Free PDF High-quality ARDMS - SPI - Latest Sonography Principles and Instrumentation Exam Vce

ARDMS SONOGRAPHY PRINCIPLES AND INSTRUMENTATION PRACTICE TEST CCI REVIEW with Answers

- WHICH FREQUENCY IS BEST TO EVALUATE STRUCTURES LYING 1 TO 2 CM FROM THE TRANSDUCER? - ✓ 8-MHZ
- WHICH ULTRASOUND PARAMETER DIRECTLY AFFECTS AN ULTRASOUND BEAM'S INTENSITY? - ✓ OUTPUT POWER
- WHICH PARAMETER IS MOST LIKELY TO AFFECT SPATIAL RESOLUTION? - ✓ DEPTH OF VISUALIZATION
- WHICH TERM DESCRIBES THE AVERAGING TOGETHER OF SCAN LINES FROM MULTIPLE ANGLES TO CREATE ONE IMAGE? - ✓ SPATIAL COMPOUNDING
- ACCORDING TO ALARA (AS LOW AS REASONABLY ACHIEVABLE) GUIDELINES, WHICH PARAMETER SHOULD BE MINIMIZED? - ✓ TRANSMIT POWER
- WHICH IMAGING MODE REQUIRES A BROADBAND TRANSDUCER? - ✓ CONTINUOUS WAVE DOPPLER
- WHAT AFFECTS THE BEAM WIDTH IN THE NEAR FIELD? - ✓ TRANSDUCER APERTURE
- WHICH CONTROL IMPROVES THE EFFECTS OF ATTENUATION? - ✓ A. DYNAMIC RANGE
B. PULSE INVERSION
C. MULTIPLE FOCAL ZONES
D. TIME-GAIN COMPENSATION
- WHICH TERM DESCRIBES BLOOD FLOW CHANGES IN RESPONSE TO RESPIRATION? - ✓ A. PHASIC
B. PARABOLIC
C. SPONTANEOUS
D. PULSATILE
- WHEN USING A 5 MHZ TRANSDUCER, IN WHICH TISSUE IS THE ULTRASOUND WAVELENGTH SHORTEST? - ✓ FAT
- WHICH VARIABLE CAN CAUSE AN ACOUSTIC SHADOW ARIFACT? - ✓ SMALL ACOUSTIC IMPEDANCE MISMATCH

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ARDMS SPI Exam Syllabus Topics:

Topic	Details
Topic 1	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 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	• Manage Ultrasound Transducers: It delves into 2D array transducer concepts, 3D • 4D transducer concepts, and nonimaging transducer concepts.
Topic 4	• 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.
Topic 5	• 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.

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ARDMS Sonography Principles and Instrumentation Sample Questions (Q113-Q118):

NEW QUESTION # 113

Which ultrasound adjustment allows for an increased frame rate in color flow Doppler?

- A. Using multiple focal zones
- B. Increasing sector scan width
- C. Decreasing depth
- D. Using continuous wave Doppler

Answer: C

Explanation:

Frame rate in color flow Doppler is influenced by several factors, including the imaging depth. Decreasing the depth reduces the time it takes for sound waves to travel to the imaging area and back to the transducer. This allows for more frames to be captured per second, thereby increasing the frame rate. Higher frame rates improve temporal resolution, making it easier to visualize moving structures.

References:

ARDMS Sonography Principles & Instrumentation Guidelines

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

NEW QUESTION # 114

What results from increasing the packet length when using color Doppler imaging?

- A. Decreased penetration
- B. Increased aliasing
- C. Decreased frame rate
- D. Increased color noise

Answer: C

Explanation:

Increasing the packet length in color Doppler imaging means increasing the number of pulses used to interrogate each scan line. This improves the accuracy of velocity measurements and sensitivity to low flow velocities but has the drawback of decreasing the frame rate. A longer packet length requires more time to acquire the necessary data, which reduces the number of frames that can be processed and displayed per second. Consequently, while color Doppler imaging becomes more precise, the temporal resolution (frame rate) decreases. Reference:

ARDMS Sonography Principles and Instrumentation guidelines

"Color Doppler, Power Doppler, and Spectral Doppler" by Michael J. Riccabona

NEW QUESTION # 115

What reduces speckle and increases visualization of specular reflectors and attenuated structures?

- A. Pixel interpolation
- B. Extended field of view
- C. Elastography
- D. Spatial compounding

Answer: D

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

Speckle is a form of acoustic noise caused by interference of scattered echoes. Spatial compounding acquires multiple images from different angles and combines them to reduce speckle, enhance tissue texture, and improve visualization of structures that may otherwise be obscured by attenuation or artifact. The Principles and Instrumentation documentation states:

"Spatial compounding averages frames obtained at varying insonation angles. This reduces speckle artifact, smooths tissue texture, and improves visibility of specular reflectors and deeper structures." Therefore, the correct answer is D: Spatial compounding.

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NEW QUESTION # 116

Which is a method to reduce noise?

- A. Decrease beam width
- B. Increase frequency
- C. Decrease depth
- D. Increase persistence

Answer: D

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

Persistence averages multiple frames to smooth out random noise fluctuations, reducing the appearance of noise in the image and improving image quality.

According to sonography instrumentation reference:

"Persistence reduces noise by averaging data from consecutive frames, improving signal-to-noise ratio and producing a smoother image." Therefore, the correct answer is D: Increase persistence.

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NEW QUESTION # 117

Which factor affects temporal resolution?

- A. Time gain compensation
- B. Display depth
- C. Log compression
- D. Overall gain

Answer: B

Explanation:

One of the main factors that influence the frame rate is the display depth. The deeper the imaging depth, the longer it takes for the ultrasound pulses to travel to the target and back, thus reducing the frame rate and temporal resolution. Shallower imaging depths allow for higher frame rates and better temporal resolution.

* "Diagnostic Ultrasound: Principles and Instruments" by Frederick W. Kremkau

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