

# Free PDF Quiz Reliable ARDMS - New SPI Study Notes

## ARDMS SPI EXAM LATEST 2023-2024 REAL EXAM 50 QUESTIONS AND CORRECT ANSWERS|AGRADE

- D - Answer what is the advantage of using pulsed-wave doppler versus continuous-wave doppler?
- A.allows measurement of higher velocities
  - B.increases range ambiguity
  - C.reduces the potential for aliasing
  - D.provides depth specificity
- D - Answer which parameter is target group C evaluating based on the image?
- A.dead zone
  - B.dynamic range
  - C.axial resolution
  - D.Horizontal distance accuracy
- A - Answer In this image, which target group is used to evaluate dead zone?
- C - Answer which ultrasound parameter directly affects an ultrasound beam's intensity?
- A.TGC
  - B.operating frequency
  - C.Output power
  - D.Frame rate
- D - Answer the center frequency of a transducer depends primarily upon which characteristics of the crystal?
- A.width
  - B.length
  - C.spacing
  - D.thickness
- C - Answer which factor limits image frame rate?
- A.transducer operating frequency
  - B.Sample volume size
  - C.Speed of sound in tissue
  - D.Spatial pulse length
- A - Answer when using a 5MHZ transducer, in which tissue is the ultrasound wavelength shortest?
- A.fat
  - B.blood
  - C.bone
  - D.muscle

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TestBraindump has designed highly effective ARDMS SPI exam questions and an online SPI practice test engine to help candidates successfully clear the Sonography Principles and Instrumentation exam. These two simple, easy, and accessible learning formats instill confidence in candidates and enable them to learn all the basic and advanced concepts required to pass the Sonography Principles and Instrumentation (SPI) Exam.

## ARDMS SPI Exam Syllabus Topics:

Topic	Details
Topic 1	<ul style="list-style-type: none"><li>• 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.</li></ul>

Topic 2	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
Topic 3	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
Topic 4	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
Topic 5	<ul style="list-style-type: none"> <li>• 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.</li> </ul>

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## ARDMS Sonography Principles and Instrumentation Sample Questions (Q164-Q169):

### NEW QUESTION # 164

What relates bandwidth to operating frequency?

- A. Quality factor
- B. Nyquist limit
- C. Autocorrelation
- D. Focal zone

**Answer: A**

Explanation:

The quality factor (Q-factor) is a dimensionless parameter that describes the efficiency of the transducer in terms of bandwidth and operating frequency. It is defined as the ratio of the operating frequency to the bandwidth. A higher Q-factor indicates a narrower bandwidth relative to the operating frequency, resulting in more precise frequency characteristics but potentially reduced axial resolution. Conversely, a lower Q-factor indicates a broader bandwidth, which improves axial resolution but may result in less precise frequency characteristics.

Reference:

### NEW QUESTION # 165

Which can cause color aliasing?

- A. Low frame rate
- B. High wall filter
- C. High Doppler gain
- **D. Low pulse repetition frequency**

**Answer: D**

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

Color aliasing occurs when the Doppler shift exceeds the Nyquist limit, which is determined by the pulse repetition frequency (PRF).

A low PRF reduces the Nyquist limit, making aliasing more likely.

According to sonography instrumentation reference:

"Aliasing occurs in color Doppler imaging when the Doppler shift frequency exceeds half of the PRF (Nyquist limit). A low PRF increases the likelihood of aliasing." Therefore, the correct answer is A: Low pulse repetition frequency.

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### NEW QUESTION # 166

What is the effect on the Doppler spectral waveform when sampling a vessel at a greater depth?

- A. Higher Doppler shifts
- B. Increased signal strength
- **C. Increased aliasing**
- D. Higher velocity measurements

**Answer: C**

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

At greater depths, pulse repetition frequency (PRF) is automatically reduced due to longer pulse travel times, lowering the Nyquist limit and increasing the likelihood of aliasing.

Principles and Instrumentation state:

"As sample depth increases, PRF decreases, lowering the Nyquist limit and increasing the risk of aliasing in pulsed-wave Doppler."

\* Doppler shift depends on flow velocity and angle, not depth.

\* Actual velocity measurements do not increase with depth.

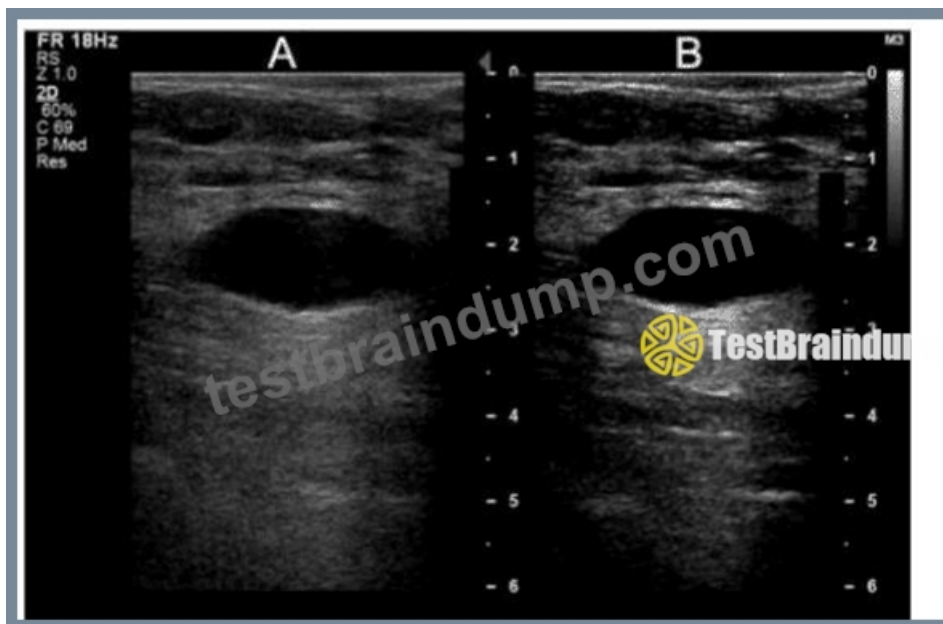
\* Signal strength typically decreases (not increases) due to attenuation.

Therefore, the correct answer is A: Increased aliasing.

### NEW QUESTION # 167

Which adjustment was made to change image A to produce image B?

A close-up of an ultrasound Description automatically generated



- A. Increased overall gain
- B. Decreased dynamic range
- C. Decreased overall gain
- D. Increased dynamic range

**Answer: B**

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

In Image B, compared to Image A, you can observe a higher contrast image with darker darks and brighter brights, indicating that dynamic range has been reduced. Decreasing dynamic range results in less grey scale, creating a more black-and-white appearance and emphasizing contrast differences.

According to sonography instrumentation reference:

"Reducing dynamic range increases image contrast by narrowing the range of displayed echo intensities, making the image appear more black and white." Therefore, the correct answer is D: Decreased dynamic range.

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#### NEW QUESTION # 168

Increasing which setting could enhance the visibility of acoustic shadowing posterior to a calcified object?

- A. Output power
- B. Gain
- C. Dynamic range
- D. Frequency

**Answer: D**

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

Higher frequencies are more attenuated than lower frequencies. When scanning calcified structures, increasing the frequency enhances attenuation, which makes posterior shadowing more pronounced and visible.

According to sonography instrumentation reference:

"Increasing frequency increases attenuation, thereby enhancing acoustic shadowing posterior to highly attenuating structures such as calcifications or bone." Therefore, the correct answer is D: Frequency.

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#### NEW QUESTION # 169

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