

PRACTICE EXAM 8: ARRT COMPUTED TOMOGRAPHY

(165 QUESTIONS)

This practice exam contains 165 scored-style questions aligned to the ARRT Computed Tomography content specifications effective September 1, 2026. Select the single best answer for each question. The actual ARRT examination also includes 30 unscored pilot questions. A scaled score of 75 is required to pass; manage your time across all items.

1. While preparing a patient for CT, the technologist reviews this situation: for a patient with limited English proficiency, which communication method is most appropriate for complex consent information?

- A. An untranslated standard form
- B. A qualified medical interpreter
- C. A nearby minor family member
- D. Gestures without verbal explanation

2. During preprocedure assessment, the CT team considers the following question: which finding after contrast administration requires the most urgent response?

- A. Inspiratory stridor with respiratory distress
- B. Mild metallic taste
- C. Brief sensation of warmth
- D. Single episode of sneezing

3. A patient-care decision is required before scanning. a patient taking metformin is scheduled for iodinated contrast. What should guide medication instructions?

- A. The selected window level
- B. Current renal function and institutional policy
- C. The number of detector rows
- D. The patient's height alone

4. During contrast preparation, the technologist must decide: which finding after contrast administration requires the most urgent response?

- A. Single episode of sneezing
- B. Brief sensation of warmth
- C. Inspiratory stridor with respiratory distress
- D. Mild metallic taste

5. While preparing a patient for CT, the technologist reviews this situation: before iodinated contrast, which laboratory value most directly estimates renal filtration?

- A. White blood cell count
- B. Serum hemoglobin
- C. Prothrombin time
- D. Estimated glomerular filtration rate

6. During preprocedure assessment, the CT team considers the following question: a patient reports warmth and a metallic taste during IV contrast injection but has no other symptoms. How should this be classified?

- A. Acute renal failure
- B. Expected physiologic effects
- C. A severe allergic-like reaction
- D. Contrast extravasation

7. A patient-care decision is required before scanning. which action is the essential purpose of a preprocedure time-out?

- A. Choose the reconstruction kernel
- B. Archive the completed image series
- C. Set the display window width
- D. Verify the correct patient, procedure, and site

8. During contrast preparation, the technologist must decide: before iodinated contrast, which laboratory value most directly estimates renal filtration?

- A. Estimated glomerular filtration rate
- B. White blood cell count
- C. Serum hemoglobin
- D. Prothrombin time

9. While preparing a patient for CT, the technologist reviews this situation: which documentation is most complete after a contrast injection?

- A. Only the name of the contrast agent
- B. Window width and reconstruction kernel
- C. Agent, concentration, volume, route, site, rate, and response
- D. Only the scan start and stop times

10. During preprocedure assessment, the CT team considers the following question: which practice is required before accessing an implanted venous port for power injection?

- A. Verify that the port and needle are power-injectable
- B. Use any available butterfly needle
- C. Assume every implanted port is rated
- D. Exceed the labeled flow limit

11. A patient-care decision is required before scanning. what is the first appropriate action when contrast extravasation is suspected during injection?

- A. Increase the injection pressure
- B. Stop the injection immediately
- C. Continue until the scan begins
- D. Apply a tight circumferential wrap

12. During contrast preparation, the technologist must decide: which infection-control action is appropriate after contact with blood?

- A. Place sharps in ordinary waste
- B. Recap a used needle with two hands
- C. Perform hand hygiene after glove removal
- D. Reuse gloves if they appear clean

13. While preparing a patient for CT, the technologist reviews this situation: a patient becomes light-headed during IV placement. What should the technologist do first?

- A. Immediately begin the CT acquisition
- B. Ask the patient to stand and walk
- C. Administer additional contrast rapidly
- D. Stop, protect the patient, and assess responsiveness

14. During preprocedure assessment, the CT team considers the following question: which step best reduces aspiration risk before a CT examination requiring oral sedation?

- A. Increase oral contrast volume
- B. Delay checking vital signs
- C. Confirm required fasting status
- D. Place the patient prone

15. A patient-care decision is required before scanning. which consent is typically demonstrated when a competent patient voluntarily extends an arm for routine venipuncture after explanation?

- A. Court-ordered consent
- B. Implied consent
- C. Proxy refusal
- D. Research authorization

16. During contrast preparation, the technologist must decide: which position most helps a dyspneic patient tolerate waiting before a chest CT?

- A. Trendelenburg without assessment
- B. Standing unattended beside the table
- C. Prone with the face covered
- D. Semi-upright with appropriate support

17. While preparing a patient for CT, the technologist reviews this situation: a patient reports warmth and a metallic taste during IV contrast injection but has no other symptoms. How should this be classified?

- A. Expected physiologic effects
- B. Acute renal failure
- C. Contrast extravasation
- D. A severe allergic-like reaction

18. During preprocedure assessment, the CT team considers the following question: when selecting a peripheral vein for power injection, which site is generally preferred when suitable?

- A. A small dorsal hand vein
- B. A large antecubital vein
- C. An artery at the wrist
- D. A vein below an infiltrated site

19. A patient-care decision is required before scanning. what is the first appropriate action when contrast extravasation is suspected during injection?

- A. Stop the injection immediately
- B. Continue until the scan begins
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- C. A vein below an infiltrated site
- D. A large antecubital vein

21. While preparing a patient for CT, the technologist reviews this situation: which action is the essential purpose of a preprocedure time-out?

- A. Set the display window width
- B. Choose the reconstruction kernel
- C. Verify the correct patient, procedure, and site
- D. Archive the completed image series

22. While applying ALARA principles, the technologist considers: which CT dose index represents scanner output averaged across a standard phantom and adjusted for pitch?

- A. CTDIvol
- B. DLP
- C. Effective dose
- D. Exposure time

23. A CT safety audit presents this question: which interaction is the major source of occupational scatter in diagnostic CT?

- A. Photodisintegration
- B. Pair production
- C. Nuclear fission
- D. Compton scattering

24. During radiation-safety review, the team must determine: what does overranging describe in helical CT?

- A. A wider display window
- B. Repeat scanning caused by patient motion
- C. Radiation beyond planned image boundaries needed for interpolation
- D. Electronic magnification after acquisition

25. During protocol optimization, the dose review team asks: which response is appropriate after an unintended radiation event?

- A. Avoid notifying responsible personnel
- B. Follow facility reporting and patient-safety procedures
- C. Delete the dose record
- D. Alter the order after scanning

26. While applying ALARA principles, the technologist considers: which strategy is most appropriate for pediatric CT?

- A. Use a single adult protocol
- B. Tailor technique to patient size and indication
- C. Add phases to prevent uncertainty
- D. Scan the largest possible range

27. A CT safety audit presents this question: which CT dose index represents scanner output averaged across a standard phantom and adjusted for pitch?

- A. Exposure time
- B. Effective dose
- C. CTDI_{vol}
- D. DLP

28. During radiation-safety review, the team must determine: why is accurate patient centering important for dose optimization?

- A. It supports proper bow-tie filter and modulation performance
- B. It increases every displayed CT number
- C. It prevents all respiratory motion
- D. It eliminates the need for collimation

29. During protocol optimization, the dose review team asks: for the same geometry, doubling distance from a radiation source changes intensity to approximately what fraction?

- A. Twice
- B. Four times
- C. One half
- D. One quarter

30. While applying ALARA principles, the technologist considers: which protocol change most directly reduces dose from z-axis overbeaming?

- A. Archive fewer image series
- B. Use a wider window width
- C. Increase display field of view
- D. Use appropriate detector configuration and collimation

31. A CT safety audit presents this question: increasing pitch above 1 in a fixed-mA helical acquisition generally has what effect?

- A. It lowers dose by moving the table farther per rotation
- B. It raises dose by stopping table motion
- C. It leaves scan speed unchanged
- D. It eliminates interpolation

32. During radiation-safety review, the team must determine: which interaction is the major source of occupational scatter in diagnostic CT?

- A. Nuclear fission
- B. Pair production
- C. Compton scattering
- D. Photodisintegration

33. During protocol optimization, the dose review team asks: which action best follows ALARA during multiphase abdominal CT?

- A. Extend coverage beyond anatomy of interest
- B. Perform only clinically justified phases
- C. Repeat every phase routinely
- D. Use adult technique for every child

34. While applying ALARA principles, the technologist considers: what is the main dose benefit of automatic tube-current modulation?

- A. It guarantees identical dose for every patient
- B. It adjusts current to patient attenuation
- C. It removes the need for centering
- D. It eliminates all image noise

35. A CT safety audit presents this question: which change generally lowers CT radiation dose when other factors remain constant?

- A. Reducing tube current-time product
- B. Extending scan length
- C. Increasing tube current-time product
- D. Adding unnecessary phases

36. During radiation-safety review, the team must determine: which quantity uses the unit milligray?

- A. Radioactivity
- B. Electrical resistance
- C. Absorbed dose
- D. Effective dose

37. During protocol optimization, the dose review team asks: what is the primary purpose of a CT dose notification?

- A. Diagnose contrast allergy
- B. Correct detector calibration automatically
- C. Measure patient creatinine
- D. Warn before a selected dose threshold

38. While applying ALARA principles, the technologist considers: how is dose-length product calculated?

- A. kVp divided by rotation time
- B. mAs multiplied by pitch only
- C. CTDIvol divided by scan length
- D. CTDIvol multiplied by scan length

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- C. mAs multiplied by pitch only
- D. CTDIvol divided by scan length

40. During radiation-safety review, the team must determine: why is accurate patient centering important for dose optimization?

- A. It eliminates the need for collimation
- B. It prevents all respiratory motion
- C. It supports proper bow-tie filter and modulation performance
- D. It increases every displayed CT number

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- D. It adjusts current to patient attenuation

43. A protocol troubleshooting session raises this question: how can beam-hardening artifact near dense bone often be reduced?

- A. Increase patient motion
- B. Apply correction software or adjust acquisition parameters
- C. Decrease calibration frequency
- D. Use incomplete projection data

44. While reviewing acquisition data, the technologist considers: which artifact is most associated with patient movement during acquisition?

- A. Misregistration streaks and blurring
- B. Uniform water calibration error
- C. Aliasing from undersampling only
- D. Concentric detector rings

45. At the reconstruction workstation, the technologist evaluates this issue: window level primarily controls which display characteristic?

- A. The table travel per rotation
- B. The number of detector channels
- C. The center CT number of the gray-scale range
- D. The x-ray tube heat capacity

46. During image-quality review, the CT team asks: which acquisition mode collects an entire volume in one gantry rotation without table motion during exposure?

- A. Helical acquisition
- B. Scout acquisition
- C. Volumetric acquisition
- D. Retrospective windowing

47. A protocol troubleshooting session raises this question: what is the function of slip rings in a CT gantry?

- A. Set the display window
- B. Measure serum creatinine
- C. Store finalized reports
- D. Permit continuous electrical connection during rotation

48. While reviewing acquisition data, the technologist considers: which algorithm is most appropriate for evaluating lung parenchyma?

- A. A cardiac calcium threshold alone
- B. A high-spatial-frequency sharp kernel
- C. A bone-removal mask only
- D. A very smooth soft-tissue kernel

49. At the reconstruction workstation, the technologist evaluates this issue: which reconstruction change generally improves in-plane spatial resolution?

- A. Use a smaller display field of view
- B. Use a larger display field of view
- C. Use a smoother algorithm
- D. Use a wider slice thickness

50. During image-quality review, the CT team asks: what does a CT uniformity test assess?

- A. Contrast injector pressure only
- B. Consistency of CT numbers across a uniform phantom
- C. Monitor room temperature only
- D. Patient heart-rate variability

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52. While reviewing acquisition data, the technologist considers: what artifact commonly appears as concentric circles centered on the rotation axis?

- A. Motion artifact
- B. Stair-step artifact
- C. Ring artifact
- D. Partial-volume artifact

53. At the reconstruction workstation, the technologist evaluates this issue: what determines pixel size in a reconstructed CT image?

- A. Display field of view divided by matrix size
- B. Slice thickness multiplied by pitch
- C. Tube current divided by time
- D. Window width plus window level

54. During image-quality review, the CT team asks: how can beam-hardening artifact near dense bone often be reduced?

- A. Apply correction software or adjust acquisition parameters
- B. Use incomplete projection data
- C. Decrease calibration frequency
- D. Increase patient motion

55. A protocol troubleshooting session raises this question: what happens when window width is narrowed?

- A. Displayed contrast decreases
- B. Displayed contrast increases
- C. Acquired dose increases
- D. Pixel size increases

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- B. Window width plus window level
- C. Display field of view divided by matrix size
- D. Tube current divided by time

58. During image-quality review, the CT team asks: which field controls the anatomy included in raw projection sampling?

- A. Scan field of view
- B. Window width
- C. Window level
- D. Display field of view

59. A protocol troubleshooting session raises this question: what is temporal resolution?

- A. Ability to distinguish adjacent small objects
- B. Ability to display subtle attenuation differences
- C. Ability to distinguish changes occurring close together in time
- D. Ability to store images without compression

60. While reviewing acquisition data, the technologist considers: which display change best evaluates very dense bone?

- A. Delete the raw data
- B. Use a narrow window centered near water
- C. Reduce DFOV to zero
- D. Use a wide window centered at a high level

61. At the reconstruction workstation, the technologist evaluates this issue: which CT number is expected for water on a properly calibrated scanner?

- A. Approximately +1000 HU
- B. Approximately 0 HU
- C. Approximately +3000 HU
- D. Approximately -1000 HU

62. During image-quality review, the CT team asks: what is the primary effect of increasing reconstruction slice thickness?

- A. Higher noise with less averaging
- B. Lower image noise with more partial-volume averaging
- C. Guaranteed higher spatial resolution
- D. No change in voxel dimensions

63. A protocol troubleshooting session raises this question: which standard supports interoperable medical image files and metadata?

- A. DICOM
- B. HTML
- C. ASCII
- D. JPEG alone

64. While reviewing acquisition data, the technologist considers: what causes aliasing artifact in CT?

- A. Correct detector calibration
- B. A properly centered phantom
- C. Insufficient angular or spatial sampling
- D. Excessive hand hygiene

65. At the reconstruction workstation, the technologist evaluates this issue: which postprocessing method emphasizes the highest-attenuation voxels along each ray?

- A. Minimum intensity projection
- B. Multiplanar reformation
- C. Surface smoothing only
- D. Maximum intensity projection

66. During image-quality review, the CT team asks: what is the main advantage of isotropic voxels?

- A. High-quality reformations in any plane
- B. Elimination of all noise
- C. Automatic dose reduction
- D. No need for raw data

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- B. DICOM
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68. While reviewing acquisition data, the technologist considers: what does partial-volume averaging occur when?

- A. The window level equals zero
- B. The patient is exactly centered
- C. Every voxel contains one tissue
- D. Different tissues occupy the same voxel

69. At the reconstruction workstation, the technologist evaluates this issue: which data are required to reconstruct images with a different kernel after scanning?

- A. Only archived dose pages
- B. Only the radiology report
- C. Raw projection data
- D. Only a screenshot

70. During image-quality review, the CT team asks: which field controls the anatomy included in raw projection sampling?

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- B. Window level
- C. Scan field of view
- D. Window width

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- A. Permit continuous electrical connection during rotation
- B. Store finalized reports
- C. Measure serum creatinine
- D. Set the display window

74. During image-quality review, the CT team asks: which factor most directly improves low-contrast resolution?

- A. Increasing pixel size alone
- B. Using a sharper kernel
- C. Reducing image noise
- D. Reducing photon number

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- B. Concentric detector rings
- C. Uniform water calibration error
- D. Misregistration streaks and blurring

77. At the reconstruction workstation, the technologist evaluates this issue: which postprocessing method is useful for displaying low-attenuation airways?

- A. Maximum intensity projection
- B. Minimum intensity projection
- C. Bone subtraction only
- D. Calcium scoring only

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- C. Helical acquisition
- D. Scout acquisition

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- A. Use a wider slice thickness
- B. Use a smoother algorithm
- C. Use a larger display field of view
- D. Use a smaller display field of view

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- C. Approximately +1000 HU
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- B. Ability to display subtle attenuation differences
- C. Ability to distinguish changes occurring close together in time
- D. Ability to store images without compression

84. While reviewing acquisition data, the technologist considers: what is the purpose of iterative reconstruction?

- A. Increase scan length automatically
- B. Reduce noise and artifacts through repeated model-based estimates
- C. Convert DICOM into paper only
- D. Replace all detector calibration

85. At the reconstruction workstation, the technologist evaluates this issue: which postprocessing method emphasizes the highest-attenuation voxels along each ray?

- A. Minimum intensity projection
- B. Surface smoothing only
- C. Multiplanar reformation
- D. Maximum intensity projection

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- A. Higher noise with less averaging
- B. Guaranteed higher spatial resolution
- C. No change in voxel dimensions
- D. Lower image noise with more partial-volume averaging

87. A protocol troubleshooting session raises this question: what does increasing matrix size while keeping DFOV constant do?

- A. Increases slice thickness
- B. Changes contrast concentration
- C. Decreases pixel size
- D. Increases pixel size

88. While reviewing acquisition data, the technologist considers: which factor most directly improves low-contrast resolution?

- A. Reducing image noise
- B. Increasing pixel size alone
- C. Reducing photon number
- D. Using a sharper kernel

89. At the reconstruction workstation, the technologist evaluates this issue: what is the purpose of iterative reconstruction?

- A. Replace all detector calibration
- B. Reduce noise and artifacts through repeated model-based estimates
- C. Increase scan length automatically
- D. Convert DICOM into paper only

90. During image-quality review, the CT team asks: what is the main advantage of isotropic voxels?

- A. Elimination of all noise
- B. Automatic dose reduction
- C. No need for raw data
- D. High-quality reformations in any plane

91. A protocol troubleshooting session raises this question: which display change best evaluates very dense bone?

- A. Use a wide window centered at a high level
- B. Use a narrow window centered near water
- C. Reduce DFOV to zero
- D. Delete the raw data

92. While reviewing acquisition data, the technologist considers: what causes aliasing artifact in CT?

- A. Correct detector calibration
- B. A properly centered phantom
- C. Insufficient angular or spatial sampling
- D. Excessive hand hygiene

93. At the reconstruction workstation, the technologist evaluates this issue: which data are required to reconstruct images with a different kernel after scanning?

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- C. Only archived dose pages
- D. Only a screenshot

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- A. Changes contrast concentration
- B. Increases slice thickness
- C. Decreases pixel size
- D. Increases pixel size

95. A clinical CT case requires the following decision: which breathing instruction helps reduce motion during routine chest CT?

- A. Pant rapidly throughout scanning
- B. Perform repeated Valsalva maneuvers
- C. Swallow continuously
- D. Suspend respiration at full inspiration

96. While planning diagnostic coverage and timing, the technologist considers: which position can help distinguish mobile pleural fluid from fixed pleural thickening?

- A. Standing without scanning
- B. Decubitus position
- C. Prone head CT position
- D. Supine position only

97. For an indication-specific CT examination, the technologist must determine: for orbital trauma, which reconstruction is particularly useful for the orbital floor?

- A. Coronal reformation
- B. Sagittal lumbar MinIP
- C. Pelvic volume rendering only
- D. Axial chest MIP

98. During protocol selection for a scheduled patient, the team asks: for suspected aortic dissection, what coverage is commonly required?

- A. From thoracic inlet through the pelvis
- B. Only the skull base
- C. Only the kidneys
- D. Only the lower legs

99. A clinical CT case requires the following decision: which CT finding is most characteristic of acute intracranial hemorrhage on a noncontrast scan?

- A. Complete absence of mass effect
- B. Air-equivalent attenuation
- C. Uniform fat attenuation
- D. Focal hyperattenuation

100. While planning diagnostic coverage and timing, the technologist considers: which phase best evaluates urinary collecting-system opacification after IV contrast?

- A. Immediate pulmonary arterial phase
- B. Delayed excretory phase
- C. Early arterial phase
- D. Noncontrast scout only

101. For an indication-specific CT examination, the technologist must determine: for temporal bone CT, which technique is most appropriate?

- A. Thick sections with a smooth kernel
- B. Wide sections without reformations
- C. Thin sections with a sharp bone algorithm
- D. Low-resolution soft-tissue images only

102. During protocol selection for a scheduled patient, the team asks: which plane best demonstrates the relationship of cervical neural foramina?

- A. Oblique sagittal reformations
- B. Axial pelvis scout
- C. Curved dental panorama only
- D. Single coronal chest image

103. A clinical CT case requires the following decision: which reformation best displays the long axis of a tortuous vessel?

- A. Minimum intensity projection
- B. Unprocessed localizer only
- C. Single fixed axial image
- D. Curved planar reformation

104. While planning diagnostic coverage and timing, the technologist considers: after CT myelography, where is contrast located?

- A. Peritoneal cavity
- B. Subarachnoid space
- C. Pleural space
- D. Epidural fat only

105. For an indication-specific CT examination, the technologist must determine: which structure is normally located in the right lower quadrant near the cecum?

- A. Pancreatic tail
- B. Appendix
- C. Spleen
- D. Left adrenal gland

106. During protocol selection for a scheduled patient, the team asks: for a soft-tissue neck CT with contrast, what coverage is commonly needed?

- A. Knees through ankles
- B. Diaphragm through pelvis
- C. Skull base through thoracic inlet
- D. Vertex through orbits only

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- B. Single fixed axial image
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- A. From thoracic inlet through the pelvis
- B. Only the kidneys
- C. Only the skull base
- D. Only the lower legs

109. For an indication-specific CT examination, the technologist must determine: which phase best evaluates urinary collecting-system opacification after IV contrast?

- A. Noncontrast scout only
- B. Early arterial phase
- C. Delayed excretory phase
- D. Immediate pulmonary arterial phase

110. During protocol selection for a scheduled patient, the team asks: for CT-guided biopsy planning, which factor is most important when choosing the needle path?

- A. Cross aerated lung unnecessarily
- B. Ignore intervening vessels
- C. Choose the longest route possible
- D. Avoid critical structures while reaching the lesion

111. A clinical CT case requires the following decision: which finding suggests small-bowel obstruction?

- A. Uniform decompression of all bowel
- B. Dilated proximal loops with a transition point
- C. Symmetric renal enhancement
- D. Isolated splenic calcification

112. While planning diagnostic coverage and timing, the technologist considers: during portal venous phase abdominal CT, which organ usually demonstrates relatively homogeneous parenchymal enhancement?

- A. Subcutaneous fat
- B. Gas-filled colon
- C. Liver
- D. Urinary bladder lumen

113. For an indication-specific CT examination, the technologist must determine: which plane best demonstrates the relationship of cervical neural foramina?

- A. Oblique sagittal reformations
- B. Axial pelvis scout
- C. Curved dental panorama only
- D. Single coronal chest image

114. During protocol selection for a scheduled patient, the team asks: which phase best demonstrates hypervascular liver lesions?

- A. Noncontrast phase only
- B. Delayed excretory phase
- C. Very late equilibrium only
- D. Late arterial phase

115. A clinical CT case requires the following decision: which CT appearance is typical of an acute subdural hematoma?

- A. Biconvex collection limited by sutures
- B. Crescent-shaped extra-axial hyperattenuation
- C. Diffuse fat attenuation around brain
- D. Air-fluid level in the ventricle

116. While planning diagnostic coverage and timing, the technologist considers: for routine noncontrast brain CT, images are commonly aligned to reduce direct lens exposure while covering the brain. Which plane is used?

- A. A plane parallel to the supraorbitomeatal line
- B. A coronal plane through the mandible
- C. A sagittal plane through one orbit
- D. An axial plane through the maxillary teeth

117. For an indication-specific CT examination, the technologist must determine: which structure lies anterior to the vertebral body and posterior to the pancreas in the upper abdomen?

- A. Gallbladder
- B. Ascending colon
- C. Abdominal aorta
- D. Rectus abdominis

118. During protocol selection for a scheduled patient, the team asks: which CT feature is typical of acute pancreatitis?

- A. Isolated bladder wall thickening
- B. Air-filled pancreatic duct in every case
- C. Peripancreatic fat stranding
- D. Uniformly calcified pancreas only

119. A clinical CT case requires the following decision: in appendicitis, which CT finding most strongly supports the diagnosis?

- A. Air in the rectum alone
- B. A decompressed gallbladder
- C. Homogeneous spleen enhancement
- D. Dilated appendix with periappendiceal inflammation

120. While planning diagnostic coverage and timing, the technologist considers: for routine noncontrast brain CT, images are commonly aligned to reduce direct lens exposure while covering the brain. Which plane is used?

- A. An axial plane through the maxillary teeth
- B. A plane parallel to the supraorbitomeatal line
- C. A sagittal plane through one orbit
- D. A coronal plane through the mandible

121. For an indication-specific CT examination, the technologist must determine: in appendicitis, which CT finding most strongly supports the diagnosis?

- A. Dilated appendix with periappendiceal inflammation
- B. A decompressed gallbladder
- C. Homogeneous spleen enhancement
- D. Air in the rectum alone

122. During protocol selection for a scheduled patient, the team asks: which acquisition timing is essential for coronary CT angiography?

- A. Random triggering after contrast
- B. Synchronization with the cardiac cycle
- C. Synchronization with swallowing
- D. Delay until bladder filling

123. A clinical CT case requires the following decision: which CT feature is typical of acute pancreatitis?

- A. Uniformly calcified pancreas only
- B. Air-filled pancreatic duct in every case
- C. Isolated bladder wall thickening
- D. Peripancreatic fat stranding

124. While planning diagnostic coverage and timing, the technologist considers: for routine noncontrast brain CT, images are commonly aligned to reduce direct lens exposure while covering the brain. Which plane is used?

- A. A plane parallel to the supraorbitomeatal line
- B. An axial plane through the maxillary teeth
- C. A coronal plane through the mandible
- D. A sagittal plane through one orbit

125. For an indication-specific CT examination, the technologist must determine: for suspected pulmonary embolism, where is the bolus-tracking ROI commonly placed?

- A. Superior sagittal sinus
- B. Urinary bladder
- C. Main pulmonary artery
- D. Left renal cortex

126. During protocol selection for a scheduled patient, the team asks: which finding suggests splenic laceration?

- A. Uniform homogeneous enhancement
- B. Gas confined to the stomach
- C. Calcification of costal cartilage
- D. Linear low attenuation with perisplenic fluid

127. A clinical CT case requires the following decision: for a renal stone CT, which protocol is generally appropriate first?

- A. Noncontrast thin-section acquisition
- B. Delayed contrast-only acquisition
- C. High-dose multiphase CTA
- D. Routine positive oral contrast

128. While planning diagnostic coverage and timing, the technologist considers: why may nitroglycerin be administered before coronary CTA?

- A. Collapse the lungs
- B. Increase bowel opacification
- C. Dilate coronary arteries
- D. Reduce renal filtration

129. For an indication-specific CT examination, the technologist must determine: for temporal bone CT, which technique is most appropriate?

- A. Wide sections without reformations
- B. Thin sections with a sharp bone algorithm
- C. Thick sections with a smooth kernel
- D. Low-resolution soft-tissue images only

130. During protocol selection for a scheduled patient, the team asks: why may beta-blocker medication be used before coronary CTA?

- A. Lower heart rate to reduce motion
- B. Produce lung hyperinflation
- C. Raise renal attenuation
- D. Increase bowel peristalsis

131. A clinical CT case requires the following decision: which finding suggests small-bowel obstruction?

- A. Symmetric renal enhancement
- B. Dilated proximal loops with a transition point
- C. Uniform decompression of all bowel
- D. Isolated splenic calcification

132. While planning diagnostic coverage and timing, the technologist considers: after CT myelography, where is contrast located?

- A. Pleural space
- B. Epidural fat only
- C. Peritoneal cavity
- D. Subarachnoid space

133. For an indication-specific CT examination, the technologist must determine: for extremity trauma, why are thin isotropic data valuable?

- A. They remove all radiation dose
- B. They eliminate the need for positioning
- C. They support high-resolution multiplanar and 3D reformations
- D. They guarantee no metal artifact

134. During protocol selection for a scheduled patient, the team asks: which structure lies anterior to the vertebral body and posterior to the pancreas in the upper abdomen?

- A. Gallbladder
- B. Ascending colon
- C. Abdominal aorta
- D. Rectus abdominis

135. A clinical CT case requires the following decision: what scan phase best evaluates active arterial bleeding after trauma?

- A. Routine scout only
- B. Delayed noncontrast phase
- C. Oral contrast phase only
- D. Arterial phase

136. While planning diagnostic coverage and timing, the technologist considers: which CT appearance is typical of an acute epidural hematoma?

- A. Symmetric ventricular air
- B. Biconvex extra-axial hyperattenuation
- C. Crescent crossing cranial sutures
- D. Diffuse low-attenuation scalp fat

137. For an indication-specific CT examination, the technologist must determine: what is the principal advantage of prone imaging for suspected ureterovesical junction stone?

- A. Differentiate a UVJ stone from a bladder stone
- B. Measure cardiac ejection fraction
- C. Increase arterial enhancement
- D. Eliminate all pelvic artifacts

138. During protocol selection for a scheduled patient, the team asks: which acquisition timing is essential for coronary CT angiography?

- A. Delay until bladder filling
- B. Synchronization with the cardiac cycle
- C. Synchronization with swallowing
- D. Random triggering after contrast

139. A clinical CT case requires the following decision: for a soft-tissue neck CT with contrast, what coverage is commonly needed?

- A. Diaphragm through pelvis
- B. Vertex through orbits only
- C. Knees through ankles
- D. Skull base through thoracic inlet

140. While planning diagnostic coverage and timing, the technologist considers: in CT angiography of the head, bolus tracking is used primarily to do what?

- A. Select a lung window
- B. Eliminate the need for IV access
- C. Begin scanning when arterial enhancement reaches a threshold
- D. Measure bone mineral density

141. For an indication-specific CT examination, the technologist must determine: in CT angiography of the head, bolus tracking is used primarily to do what?

- A. Begin scanning when arterial enhancement reaches a threshold
- B. Select a lung window
- C. Eliminate the need for IV access
- D. Measure bone mineral density

142. During protocol selection for a scheduled patient, the team asks: for CT colonography, what preparation is important for distinguishing residual material from polyps?

- A. Scanning only one position
- B. Fecal and fluid tagging
- C. Eliminating colonic distention
- D. Using no bowel preparation

143. A clinical CT case requires the following decision: for CT-guided biopsy planning, which factor is most important when choosing the needle path?

- A. Avoid critical structures while reaching the lesion
- B. Ignore intervening vessels
- C. Choose the longest route possible
- D. Cross aerated lung unnecessarily

144. While planning diagnostic coverage and timing, the technologist considers: which phase best demonstrates hypervascular liver lesions?

- A. Noncontrast phase only
- B. Very late equilibrium only
- C. Late arterial phase
- D. Delayed excretory phase

145. For an indication-specific CT examination, the technologist must determine: which position can help distinguish mobile pleural fluid from fixed pleural thickening?

- A. Prone head CT position
- B. Standing without scanning
- C. Supine position only
- D. Decubitus position

146. During protocol selection for a scheduled patient, the team asks: which CT appearance is typical of an acute subdural hematoma?

- A. Biconvex collection limited by sutures
- B. Crescent-shaped extra-axial hyperattenuation
- C. Diffuse fat attenuation around brain
- D. Air-fluid level in the ventricle

147. A clinical CT case requires the following decision: for extremity trauma, why are thin isotropic data valuable?

- A. They eliminate the need for positioning
- B. They guarantee no metal artifact
- C. They support high-resolution multiplanar and 3D reformations
- D. They remove all radiation dose

148. While planning diagnostic coverage and timing, the technologist considers: during portal venous phase abdominal CT, which organ usually demonstrates relatively homogeneous parenchymal enhancement?

- A. Urinary bladder lumen
- B. Subcutaneous fat
- C. Gas-filled colon
- D. Liver

149. For an indication-specific CT examination, the technologist must determine: which CT appearance is typical of an acute epidural hematoma?

- A. Biconvex extra-axial hyperattenuation
- B. Symmetric ventricular air
- C. Diffuse low-attenuation scalp fat
- D. Crescent crossing cranial sutures

150. During protocol selection for a scheduled patient, the team asks: which structure is normally located in the right lower quadrant near the cecum?

- A. Spleen
- B. Pancreatic tail
- C. Appendix
- D. Left adrenal gland

151. A clinical CT case requires the following decision: for orbital trauma, which reconstruction is particularly useful for the orbital floor?

- A. Sagittal lumbar MinIP
- B. Axial chest MIP
- C. Pelvic volume rendering only
- D. Coronal reformation

152. While planning diagnostic coverage and timing, the technologist considers: for suspected pulmonary embolism, where is the bolus-tracking ROI commonly placed?

- A. Main pulmonary artery
- B. Superior sagittal sinus
- C. Left renal cortex
- D. Urinary bladder

153. For an indication-specific CT examination, the technologist must determine: which phase is commonly used for routine evaluation of most abdominal solid organs?

- A. Early cortical phase only
- B. Portal venous phase
- C. Noncontrast phase in every case
- D. Pulmonary arterial phase

154. During protocol selection for a scheduled patient, the team asks: for CT colonography, what preparation is important for distinguishing residual material from polyps?

- A. Eliminating colonic distention
- B. Scanning only one position
- C. Using no bowel preparation
- D. Fecal and fluid tagging

155. A clinical CT case requires the following decision: which CT finding is most characteristic of acute intracranial hemorrhage on a noncontrast scan?

- A. Uniform fat attenuation
- B. Focal hyperattenuation
- C. Complete absence of mass effect
- D. Air-equivalent attenuation

156. While planning diagnostic coverage and timing, the technologist considers: why may beta-blocker medication be used before coronary CTA?

- A. Raise renal attenuation
- B. Increase bowel peristalsis
- C. Lower heart rate to reduce motion
- D. Produce lung hyperinflation

157. For an indication-specific CT examination, the technologist must determine: what scan phase best evaluates active arterial bleeding after trauma?

- A. Arterial phase
- B. Oral contrast phase only
- C. Routine scout only
- D. Delayed noncontrast phase

158. During protocol selection for a scheduled patient, the team asks: which contrast route is used for CT arthrography?

- A. Subcutaneous injection
- B. Intra-articular injection
- C. Inhaled administration
- D. Intrathecal injection

159. A clinical CT case requires the following decision: which breathing instruction helps reduce motion during routine chest CT?

- A. Swallow continuously
- B. Pant rapidly throughout scanning
- C. Suspend respiration at full inspiration
- D. Perform repeated Valsalva maneuvers

160. While planning diagnostic coverage and timing, the technologist considers: which finding suggests splenic laceration?

- A. Gas confined to the stomach
- B. Uniform homogeneous enhancement
- C. Calcification of costal cartilage
- D. Linear low attenuation with perisplenic fluid

161. For an indication-specific CT examination, the technologist must determine: for a renal stone CT, which protocol is generally appropriate first?

- A. Noncontrast thin-section acquisition
- B. High-dose multiphase CTA
- C. Delayed contrast-only acquisition
- D. Routine positive oral contrast

162. During protocol selection for a scheduled patient, the team asks: why may nitroglycerin be administered before coronary CTA?

- A. Dilate coronary arteries
- B. Increase bowel opacification
- C. Reduce renal filtration
- D. Collapse the lungs

163. A clinical CT case requires the following decision: what is the principal advantage of prone imaging for suspected ureterovesical junction stone?

- A. Eliminate all pelvic artifacts
- B. Differentiate a UVJ stone from a bladder stone
- C. Increase arterial enhancement
- D. Measure cardiac ejection fraction

164. While planning diagnostic coverage and timing, the technologist considers: which phase is commonly used for routine evaluation of most abdominal solid organs?

- A. Early cortical phase only
- B. Noncontrast phase in every case
- C. Pulmonary arterial phase
- D. Portal venous phase

165. For an indication-specific CT examination, the technologist must determine: which contrast route is used for CT arthrography?

- A. Inhaled administration
- B. Subcutaneous injection
- C. Intra-articular injection
- D. Intrathecal injection

Practice Exam 8: Answer Key and Explanations

1. B — A qualified interpreter promotes accurate, confidential communication and supports meaningful consent. Children, gestures, or untranslated forms can omit critical information and do not reliably confirm patient understanding. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

2. A — Stridor signals upper-airway compromise and can rapidly become life-threatening, requiring emergency response and treatment. Warmth, metallic taste, and isolated sneezing are usually mild or expected effects. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

3. B — Renal function and current evidence-based policy determine whether metformin needs temporary interruption and follow-up. Height, display settings, and detector configuration do not determine medication management. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

4. C — Stridor signals upper-airway compromise and can rapidly become life-threatening, requiring emergency response and treatment. Warmth, metallic taste, and isolated sneezing are usually mild or expected effects. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

5. D — eGFR estimates kidney filtration and helps identify patients who may require additional contrast-risk assessment. The other values address infection, oxygen-carrying capacity, or coagulation rather than renal clearance. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

6. B — Transient warmth and metallic taste are common physiologic effects of iodinated contrast. They do not alone indicate an allergic-like emergency, extravasation, or kidney injury, though continued observation remains appropriate. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated.

7. D — A time-out prevents wrong-patient, wrong-procedure, and wrong-site events by requiring active confirmation immediately before the procedure. Technical display and archiving decisions occur elsewhere in the workflow. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

8. A — eGFR estimates kidney filtration and helps identify patients who may require additional contrast-risk assessment. The other values address infection, oxygen-carrying capacity, or coagulation rather than renal clearance. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

9. C — Complete documentation identifies what was administered, how and where it was delivered, and the patient response. This supports continuity, safety review, and investigation of reactions or extravasation. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

10. A — The device and access needle must both be verified as power-injectable, including approved pressure and flow limits. Appearance alone is insufficient, and exceeding labeling can damage the device or patient. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the.

11. B — Stopping the injection limits additional contrast in the soft tissues. The site and patient are then assessed according to policy. Increasing pressure, continuing injection, or applying a constrictive wrap can worsen injury. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not.

12. C — Gloves do not replace hand hygiene because contamination can occur during removal or through defects. Used gloves are discarded, sharps go directly into approved containers, and two-handed recapping increases needlestick risk. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

13. D — Stopping and protecting the patient prevents a fall while responsiveness and vital signs are assessed. Scanning, ambulation, or rapid medication administration before assessment can worsen a vasovagal episode or obscure deterioration. This distinction supports safe protocol selection, accurate

image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

14. C — Confirming fasting status is part of preprocedure screening and reduces aspiration risk when sedation is planned. Changing contrast volume or position does not replace preparation, and baseline monitoring should not be delayed. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not.

15. B — Voluntary cooperation after an understandable explanation commonly represents implied consent for a routine, low-risk action. It does not substitute for written informed consent when institutional policy or procedure risk requires it. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

16. D — A supported semi-upright position can improve ventilation and comfort while monitoring continues. Unassessed Trendelenburg, prone obstruction, or unattended standing may worsen breathing or create a fall hazard. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

17. A — Transient warmth and metallic taste are common physiologic effects of iodinated contrast. They do not alone indicate an allergic-like emergency, extravasation, or kidney injury, though continued observation remains appropriate. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated.

18. B — A large antecubital vein usually tolerates the pressure and flow required for CT power injection. Small distal veins have greater extravasation risk, arteries must not be used, and compromised sites should be avoided. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do.

19. A — Stopping the injection limits additional contrast in the soft tissues. The site and patient are then assessed according to policy. Increasing pressure, continuing injection, or applying a constrictive wrap can worsen injury. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not.

20. D — A large antecubital vein usually tolerates the pressure and flow required for CT power injection. Small distal veins have greater extravasation risk, arteries must not be used, and compromised sites should be avoided. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do.

21. C — A time-out prevents wrong-patient, wrong-procedure, and wrong-site events by requiring active confirmation immediately before the procedure. Technical display and archiving decisions occur elsewhere in the workflow. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

22. A — CTDI_{vol} normalizes weighted CTDI for pitch and describes scanner radiation output for a protocol. DLP incorporates scan length, effective dose estimates population risk, and exposure time alone is not a dose index. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not.

23. D — Compton interactions dominate scatter production at diagnostic energies and can expose personnel near the patient. Pair production requires much higher photon energy, while photodisintegration and fission are not diagnostic CT interactions. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

24. C — Helical reconstruction requires data just beyond the imaged range, creating irradiation outside the prescribed boundaries. Overranging is distinct from repeat scanning, display magnification, or window adjustment. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

25. B — Adverse events require prompt documentation, escalation, and review under facility policy. Preserving accurate records supports patient care and prevention. Deleting or altering information undermines safety and accountability. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

26. B — Children require indication-specific and size-adjusted protocols because smaller bodies need less output and have greater lifetime radiation sensitivity. Adult settings, unnecessary phases, and excessive coverage conflict with optimization. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

27. C — CTDI_{vol} normalizes weighted CTDI for pitch and describes scanner radiation output for a protocol. DLP incorporates scan length, effective dose estimates population risk, and exposure time alone is not a dose index. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not.

28. A — Isocenter positioning lets the localizer, bow-tie filter, and exposure controls estimate attenuation correctly. Off-centering can alter dose and noise. It does not stop breathing, raise all CT numbers, or replace collimation. This distinction supports safe protocol selection, accurate image

interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

29. D — The inverse square law states intensity varies inversely with distance squared. Doubling distance produces one fourth the intensity. This distance principle supports personnel protection when remaining in the scan room is unavoidable. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not.

30. D — Overbeaming occurs when the penumbra extends beyond the active detector width. Appropriate collimation and detector configuration reduce the unused irradiated margin. Display and archive choices occur after exposure. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

31. A — At fixed technique, higher pitch advances the table farther per rotation, shortening irradiation per unit length and generally reducing dose. Modern automatic controls may alter mA, so protocol context still matters. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

32. C — Compton interactions dominate scatter production at diagnostic energies and can expose personnel near the patient. Pair production requires much higher photon energy, while photodisintegration and fission are not diagnostic CT interactions. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

33. B — ALARA requires each phase and coverage region to be clinically justified and optimized. Routine repeats, excessive range, and unadjusted adult techniques add exposure without corresponding diagnostic benefit. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

34. B — Tube-current modulation varies mA with patient size and attenuation to avoid unnecessary output while maintaining selected image quality. It cannot eliminate noise, compensate fully for poor centering, or give every patient the same dose. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices.

35. A — Reducing mAs decreases photon quantity and usually lowers dose, although image noise rises. Increasing mAs, scanning farther, or adding phases increases total exposure rather than reducing it. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

36. C — The gray measures absorbed energy per unit mass, and milligray is commonly used for CT dose indices. Effective dose uses sievert, radioactivity uses becquerel, and resistance uses ohm. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

37. D — Dose notifications prompt review when planned settings exceed configured values, helping prevent unintended high exposures. They do not assess allergies, calibrate detectors, or measure laboratory values. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

38. D — DLP equals CTDIvol times irradiated scan length and therefore reflects both scanner output and examination coverage. It is expressed in mGy·cm and is not calculated from pitch or kVp alone. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the.

39. B — DLP equals CTDIvol times irradiated scan length and therefore reflects both scanner output and examination coverage. It is expressed in mGy·cm and is not calculated from pitch or kVp alone. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the.

40. C — Isocenter positioning lets the localizer, bow-tie filter, and exposure controls estimate attenuation correctly. Off-centering can alter dose and noise. It does not stop breathing, raise all CT numbers, or replace collimation. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

41. A — Reducing mAs decreases photon quantity and usually lowers dose, although image noise rises. Increasing mAs, scanning farther, or adding phases increases total exposure rather than reducing it. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

42. D — Tube-current modulation varies mA with patient size and attenuation to avoid unnecessary output while maintaining selected image quality. It cannot eliminate noise, compensate fully for poor centering, or give every patient the same dose. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices.

43. B — Beam-hardening correction, appropriate kVp, thinner sections, or optimized reconstruction can reduce dark bands and streaks near dense structures. Motion, incomplete data, and poor calibration worsen artifacts. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

44. A — Motion changes anatomy between projections, producing inconsistency reconstructed as streaks, shading, or blurring. Rings point to detector calibration, and water errors reflect quality-control issues. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

45. C — Window level sets the central HU value represented by the gray scale, determining which tissues appear mid-gray. Detector count, tube heat, and table motion are acquisition properties. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

46. C — A sufficiently wide detector can acquire a volume during one rotation with the table stationary, useful for dynamic or cardiac studies. Helical scanning combines rotation with table movement. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

47. D — Slip rings transfer electrical power and signals across rotating components without cables winding around the gantry. This enables continuous rotation used for helical CT. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

48. B — A sharp kernel preserves high-frequency edge detail needed for lung structures, though it increases noise. Smooth kernels favor low-contrast soft tissue and can blur fine pulmonary detail. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

49. A — A smaller DFOV maps the anatomy onto smaller pixels for a fixed matrix, improving displayed in-plane resolution when acquisition data support it. Larger DFOV, thick slices, and smoothing reduce fine-detail visibility. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

50. B — Uniformity testing compares CT numbers across locations in a homogeneous phantom to detect calibration or detector problems. It is not a patient, injector, or environmental measurement. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

51. D — A sharp kernel preserves high-frequency edge detail needed for lung structures, though it increases noise. Smooth kernels favor low-contrast soft tissue and can blur fine pulmonary detail. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT

practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

52. C — A miscalibrated or defective detector element produces consistent errors through rotation, reconstructing as rings. Motion creates streaks or blurring, while stair-step and partial-volume appearances have different causes. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

53. A — Pixel size equals DFOV divided by the number of matrix elements across the image. Slice thickness defines voxel depth, while exposure and window settings do not determine in-plane pixel dimensions. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the.

54. A — Beam-hardening correction, appropriate kVp, thinner sections, or optimized reconstruction can reduce dark bands and streaks near dense structures. Motion, incomplete data, and poor calibration worsen artifacts. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

55. B — A narrow window maps a smaller HU range across available gray shades, increasing displayed contrast. Windowing changes presentation after acquisition and does not alter pixel size or patient dose. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated.

56. D — A miscalibrated or defective detector element produces consistent errors through rotation, reconstructing as rings. Motion creates streaks or blurring, while stair-step and partial-volume appearances have different causes. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

57. C — Pixel size equals DFOV divided by the number of matrix elements across the image. Slice thickness defines voxel depth, while exposure and window settings do not determine in-plane pixel dimensions. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the.

58. A — SFOV defines the acquisition area accepted by the detector and reconstruction system. DFOV selects how reconstructed anatomy is displayed, while window settings control gray-scale mapping. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

59. C — Temporal resolution describes how quickly the system captures changing anatomy, especially important in cardiac imaging. Spatial resolution concerns small objects, and contrast resolution concerns small attenuation differences. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

60. D — A wide window accommodates the broad range of high bone attenuation and a higher level centers the display appropriately. Narrow soft-tissue settings saturate dense structures. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

61. B — Water is the reference at approximately zero Hounsfield units. Air is near minus 1000 HU and dense bone is positive. Regular quality control checks water accuracy and uniformity. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

62. B — Thicker slices include more photons and average more tissue, reducing noise but increasing partial-volume effects and reducing z-axis resolution. They do not leave voxel size unchanged or guarantee better detail. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the.

63. A — DICOM defines medical image objects, metadata, and communication services used among scanners, workstations, and archives. Generic formats alone do not preserve the same clinical identifiers and imaging information. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

64. C — Aliasing arises when projection sampling is inadequate for the spatial frequencies present, creating fine stripes or streaks. Proper sampling and reconstruction choices reduce it. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

65. D — MIP selects the highest voxel value along each viewing ray, making contrast-enhanced vessels and calcifications conspicuous. MinIP emphasizes low values, while MPR displays sections in another plane. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

66. A — Equal voxel dimensions permit reformations with similar spatial resolution across planes, supporting detailed MPR and 3D work. Isotropy does not eliminate noise, remove raw-data needs, or automatically lower dose. This distinction supports safe protocol selection, accurate image

interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated.

67. B — DICOM defines medical image objects, metadata, and communication services used among scanners, workstations, and archives. Generic formats alone do not preserve the same clinical identifiers and imaging information. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

68. D — When multiple tissues share a voxel, the system records their averaged attenuation, potentially obscuring small structures. Thin slices reduce this effect by decreasing voxel depth. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

69. C — Raw data preserve measured projections needed for new reconstructions. A screenshot, report, or dose page lacks the projection information necessary to change slice thickness, interval, or algorithm. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

70. C — SFOV defines the acquisition area accepted by the detector and reconstruction system. DFOV selects how reconstructed anatomy is displayed, while window settings control gray-scale mapping. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

71. B — When multiple tissues share a voxel, the system records their averaged attenuation, potentially obscuring small structures. Thin slices reduce this effect by decreasing voxel depth. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

72. D — A narrow window maps a smaller HU range across available gray shades, increasing displayed contrast. Windowing changes presentation after acquisition and does not alter pixel size or patient dose. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated.

73. A — Slip rings transfer electrical power and signals across rotating components without cables winding around the gantry. This enables continuous rotation used for helical CT. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

74. C — Low-contrast detectability improves when noise decreases, often through adequate photons, thicker sections, or iterative reconstruction. Sharp kernels and fewer photons increase noise and impair subtle contrast detection. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

75. A — Uniformity testing compares CT numbers across locations in a homogeneous phantom to detect calibration or detector problems. It is not a patient, injector, or environmental measurement. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

76. D — Motion changes anatomy between projections, producing inconsistency reconstructed as streaks, shading, or blurring. Rings point to detector calibration, and water errors reflect quality-control issues. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

77. B — MinIP displays the lowest attenuation encountered along each ray, highlighting air-filled bronchi or low-density structures. MIP instead favors high-attenuation vessels and calcification. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

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79. C — Window level sets the central HU value represented by the gray scale, determining which tissues appear mid-gray. Detector count, tube heat, and table motion are acquisition properties. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

80. A — A sufficiently wide detector can acquire a volume during one rotation with the table stationary, useful for dynamic or cardiac studies. Helical scanning combines rotation with table movement. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

81. D — A smaller DFOV maps the anatomy onto smaller pixels for a fixed matrix, improving displayed in-plane resolution when acquisition data support it. Larger DFOV, thick slices, and smoothing reduce fine-detail visibility. This distinction supports safe protocol selection, accurate image

interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

82. A — Water is the reference at approximately zero Hounsfield units. Air is near minus 1000 HU and dense bone is positive. Regular quality control checks water accuracy and uniformity. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

83. C — Temporal resolution describes how quickly the system captures changing anatomy, especially important in cardiac imaging. Spatial resolution concerns small objects, and contrast resolution concerns small attenuation differences. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

84. B — Iterative methods repeatedly compare estimated images with measured data, reducing noise and some artifacts compared with conventional filtered backprojection. They do not determine coverage, eliminate calibration, or merely change file format. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

85. D — MIP selects the highest voxel value along each viewing ray, making contrast-enhanced vessels and calcifications conspicuous. MinIP emphasizes low values, while MPR displays sections in another plane. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

86. D — Thicker slices include more photons and average more tissue, reducing noise but increasing partial-volume effects and reducing z-axis resolution. They do not leave voxel size unchanged or guarantee better detail. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the.

87. C — More matrix elements across the same field create smaller pixels and potentially better displayed spatial resolution. It does not directly alter slice thickness or contrast concentration. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

88. A — Low-contrast detectability improves when noise decreases, often through adequate photons, thicker sections, or iterative reconstruction. Sharp kernels and fewer photons increase noise and impair subtle contrast detection. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

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92. C — Aliasing arises when projection sampling is inadequate for the spatial frequencies present, creating fine stripes or streaks. Proper sampling and reconstruction choices reduce it. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

93. B — Raw data preserve measured projections needed for new reconstructions. A screenshot, report, or dose page lacks the projection information necessary to change slice thickness, interval, or algorithm. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

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95. D — A consistent inspiratory breath-hold expands the lungs and minimizes respiratory motion for most routine chest studies. Panting, swallowing, or repeated straining introduces motion and variable anatomy. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

96. B — In a decubitus acquisition, free pleural fluid layers dependently while fixed pleural disease remains stationary. This positional behavior can clarify equivocal findings when clinically justified. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT

practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

97. A — Coronal images show the orbital floor and inferior rectus relationship well, aiding detection of blowout fractures and entrapment. Thin axial source images permit high-quality reformations. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

98. A — Dissection can extend from the thoracic aorta into abdominal and iliac branches, so rapid angiographic coverage commonly spans chest through pelvis. Clinical concern may require additional coverage. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

99. D — Fresh blood is usually hyperattenuating relative to brain on noncontrast CT because of its protein and cellular content. Appearance evolves over time, but fat or air attenuation is not typical. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the.

100. B — Delayed images allow filtered iodinated contrast to enter the calyces, ureters, and bladder, demonstrating urothelial anatomy and obstruction. Early arterial or pulmonary timing precedes urinary excretion. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

101. C — The tiny ossicles, cochlea, semicircular canals, and bony margins require thin sections and a high-resolution bone kernel, often with targeted reformations. Thick smooth images obscure fine detail. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

102. A — Oblique sagittal reformations aligned to the foramina show their caliber and relationship to discs and osteophytes. Unrelated chest, pelvis, or dental views do not evaluate cervical foramina. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

103. D — Curved planar reformation follows a vessel centerline and displays its course in one plane, aiding stenosis and length assessment. A single axial slice or localizer cannot show the entire tortuous path. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address.

104. B — Myelography introduces approved contrast into the subarachnoid space so nerve roots and the thecal sac can be assessed. The epidural, peritoneal, and pleural spaces are different compartments. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

105. B — The appendix arises from the cecum in the right lower quadrant, although its tip position varies. The spleen, pancreatic tail, and left adrenal gland are in the left upper abdomen. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the.

106. C — Soft-tissue neck evaluation commonly covers the skull base through the thoracic inlet to include pharynx, larynx, lymph-node chains, vessels, and lower neck structures. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

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110. D — The safest path reaches the target while minimizing traversal of vessels, bowel, pleura, nerves, and other critical structures. Planning uses cross-sectional images and patient positioning to reduce complications. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

111. B — Mechanical obstruction typically produces dilated bowel proximal to a transition point and decompressed distal loops. Other listed findings do not describe bowel caliber or transit. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It

also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

112. C — Portal venous timing produces strong, relatively homogeneous hepatic enhancement through portal inflow and is widely used for abdominal survey. Bladder urine, bowel gas, and fat do not show this pattern. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the.

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114. D — Hypervascular lesions receive prominent arterial supply and may enhance conspicuously during late arterial imaging before background liver reaches peak portal enhancement. Later phases remain useful for washout characterization. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

115. B — Acute subdural blood commonly forms a crescent along the cerebral convexity and can cross sutures, although dural reflections limit spread. A biconvex collection is more typical of epidural hemorrhage. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated.

116. A — Aligning acquisition near the supraorbitomeatal line helps cover the brain while avoiding or reducing direct irradiation of the lenses when anatomy permits. Mandibular, unilateral orbital, or dental planes do not provide routine brain coverage. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices.

117. C — The abdominal aorta descends anterior to the vertebral bodies and posterior to the pancreas. The gallbladder, colon, and rectus muscles occupy more anterior or lateral locations. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

118. C — Inflammation commonly produces pancreatic enlargement, edema, and peripancreatic fat stranding or fluid. Ductal air, diffuse calcification, and bladder thickening do not define acute pancreatitis. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

119. D — An enlarged appendix accompanied by wall changes and surrounding fat stranding strongly supports acute appendicitis. The other findings are unrelated or nonspecific abdominal observations. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

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122. B — ECG synchronization reduces coronary motion by reconstructing data during selected cardiac phases. Swallowing and bladder timing are unrelated, while random triggering degrades coronary assessment. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

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125. C — Monitoring the main pulmonary artery allows acquisition during peak pulmonary arterial enhancement for CTPA. Renal, bladder, and intracranial venous locations correspond to different physiologic phases. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

126. D — A laceration appears as an irregular or linear hypoattenuating defect, often with subcapsular hematoma or surrounding blood. Homogeneous enhancement argues against focal disruption. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT

practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

127. A — Most urinary calculi are directly visible on noncontrast CT, which avoids obscuring stones and unnecessary contrast. Thin sections support detection and reformations while dose should be optimized. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

128. C — Nitroglycerin can dilate coronary arteries, improving visualization of the lumen and smaller branches. Contraindications and blood pressure must be reviewed before administration. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

129. B — The tiny ossicles, cochlea, semicircular canals, and bony margins require thin sections and a high-resolution bone kernel, often with targeted reformations. Thick smooth images obscure fine detail. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

130. A — A lower, regular heart rate lengthens relatively motion-free portions of the cardiac cycle and can improve coronary image quality. Medication use requires screening and adherence to authorized protocols. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

131. B — Mechanical obstruction typically produces dilated bowel proximal to a transition point and decompressed distal loops. Other listed findings do not describe bowel caliber or transit. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

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133. C — Thin near-isotropic voxels allow accurate reformations along complex bones and joints and support surgical planning. They do not eliminate positioning, artifacts, or exposure. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

134. C — The abdominal aorta descends anterior to the vertebral bodies and posterior to the pancreas. The gallbladder, colon, and rectus muscles occupy more anterior or lateral locations. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

135. D — Active arterial extravasation and vascular injury are most conspicuous during appropriately timed arterial imaging. Portal and delayed phases may add information about organ injury or persistent leakage. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

136. B — Epidural blood often has a lentiform or biconvex shape and is limited by suture attachments. Subdural collections more often form crescents along the brain surface. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

137. A — Prone positioning may move a free bladder calculus anteriorly, whereas an impacted UVJ stone remains at the posterior junction. This targeted maneuver can resolve location without contrast. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

138. B — ECG synchronization reduces coronary motion by reconstructing data during selected cardiac phases. Swallowing and bladder timing are unrelated, while random triggering degrades coronary assessment. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

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140. C — Bolus tracking monitors enhancement in a selected vessel and triggers acquisition near the desired vascular phase. It coordinates contrast timing rather than assessing bone, windowing lungs, or replacing access. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated.

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consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated.

142. B — Tagging labels residual stool and fluid with oral contrast so software and readers can distinguish them from mucosal lesions. Adequate cleansing, distention, and usually two positions improve evaluation. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

143. A — The safest path reaches the target while minimizing traversal of vessels, bowel, pleura, nerves, and other critical structures. Planning uses cross-sectional images and patient positioning to reduce complications. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

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151. D — Coronal images show the orbital floor and inferior rectus relationship well, aiding detection of blowout fractures and entrapment. Thin axial source images permit high-quality reformations. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

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153. B — Portal venous phase balances hepatic, splenic, pancreatic, venous, and many lesion findings for broad abdominal assessment. Other phases are selected for specific indications. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

154. D — Tagging labels residual stool and fluid with oral contrast so software and readers can distinguish them from mucosal lesions. Adequate cleansing, distention, and usually two positions improve evaluation. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

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156. C — A lower, regular heart rate lengthens relatively motion-free portions of the cardiac cycle and can improve coronary image quality. Medication use requires screening and adherence to authorized protocols. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical.

157. A — Active arterial extravasation and vascular injury are most conspicuous during appropriately timed arterial imaging. Portal and delayed phases may add information about organ injury or persistent leakage. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

158. B — CT arthrography places diluted iodinated contrast directly into a joint under sterile conditions, outlining cartilage, labra, and intra-articular structures. Intrathecal contrast is used for myelography. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

159. C — A consistent inspiratory breath-hold expands the lungs and minimizes respiratory motion for most routine chest studies. Panting, swallowing, or repeated straining introduces motion and variable anatomy. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

160. D — A laceration appears as an irregular or linear hypoattenuating defect, often with subcapsular hematoma or surrounding blood. Homogeneous enhancement argues against focal disruption. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

161. A — Most urinary calculi are directly visible on noncontrast CT, which avoids obscuring stones and unnecessary contrast. Thin sections support detection and reformations while dose should be optimized. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

162. A — Nitroglycerin can dilate coronary arteries, improving visualization of the lumen and smaller branches. Contraindications and blood pressure must be reviewed before administration. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

163. B — Prone positioning may move a free bladder calculus anteriorly, whereas an impacted UVJ stone remains at the posterior junction. This targeted maneuver can resolve location without contrast. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

164. D — Portal venous phase balances hepatic, splenic, pancreatic, venous, and many lesion findings for broad abdominal assessment. Other phases are selected for specific indications. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It

also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.

165. C — CT arthrography places diluted iodinated contrast directly into a joint under sterile conditions, outlining cartilage, labra, and intra-articular structures. Intrathecal contrast is used for myelography. This distinction supports safe protocol selection, accurate image interpretation, and consistent entry-level CT practice. It also helps the technologist recognize why the alternative choices do not address the stated clinical or technical objective.