

PRACTICE EXAM 3: ARRT COMPUTED TOMOGRAPHY SIMULATION (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. Allow 195 minutes. ARRT reports results on a scaled 1-99 scale; a scaled score of 75 is required to pass and is not equivalent to 75 percent correct.

1. At a multidisciplinary CT protocol meeting, which action is appropriate when screening a patient who may be pregnant?
 - A. Assume CT is prohibited in every circumstance
 - B. Ignore pregnancy status for abdominal imaging in the stated clinical situation
 - C. Ask another patient to decide for the ordered imaging task
 - D. Follow the facility's pregnancy-screening and radiologist consultation process

2. While preparing the scanner for the first morning case, why is a saline chaser commonly used after an iodinated contrast bolus?
 - A. It permanently prevents every contrast reaction for this CT examination
 - B. It advances contrast through the tubing and may improve bolus utilization
 - C. It replaces renal function assessment for the ordered imaging task
 - D. It eliminates the need for venous access checks during the described CT procedure

3. An experienced technologist asks a trainee: which route is appropriate for positive oral contrast in a routine abdominal CT when ordered?

- A. Injection into an artery
- B. Injection into the pleural space
- C. Application to intact skin
- D. Administration through the gastrointestinal tract

4. After reviewing the localizer and clinical history, what is the purpose of screening for medications before contrast-enhanced CT?

- A. Determine the patient's shoe size for this CT examination
- B. Choose the monitor brightness in the stated clinical situation
- C. Identify drugs or conditions that require protocol-specific management
- D. Set the archive compression ratio during the described CT procedure

5. During a post-examination quality review, which observation best evaluates a peripheral IV before power injection?

- A. Confirm patency according to policy and inspect for pain, swelling, or leakage
- B. Judge patency only by catheter color in the stated clinical situation
- C. Cover the site so it cannot be observed for the ordered imaging task
- D. Increase pressure until resistance disappears during the described CT procedure during the described CT procedure

6. Before releasing the images for interpretation, after a mild contrast reaction resolves, what remains necessary?

- A. Delete the contrast record for this CT examination
- B. Tell the patient reactions never recur in the stated clinical situation
- C. Observe as directed and document the reaction and interventions
- D. Resume injection without authorization during the described CT procedure

7. At a multidisciplinary CT protocol meeting, which consent element is essential before a CT-guided biopsy?

- A. The technologist guarantees a diagnostic result for this CT examination
- B. The patient receives understandable information about purpose, risks, benefits, and alternatives
- C. Consent is obtained after sedation for the ordered imaging task
- D. Only equipment risks are discussed during the described CT procedure

8. While preparing the scanner for the first morning case, before iodinated contrast administration, which laboratory value most directly estimates renal filtration?

- A. Estimated glomerular filtration rate (eGFR)
- B. White blood cell count
- C. Prothrombin time for the ordered imaging task
- D. Serum bilirubin during the described CT procedure

9. An experienced technologist asks a trainee: which action best confirms that a patient understands a CT examination before consent?

- A. Provide only the appointment time for this CT examination for this CT examination
- B. Obtain a signature without discussion in the stated clinical situation
- C. Ask a family member to answer for the ordered imaging task
- D. Ask the patient to explain the procedure in their own words

10. After reviewing the localizer and clinical history, a conscious patient develops hives and itching after iodinated contrast. What is the most appropriate initial response?

- A. Stop the injection, assess the patient, and summon appropriate assistance
- B. Continue the injection at half the rate in the stated clinical situation
- C. Immediately discharge the patient for the ordered imaging task
- D. Ask the patient to walk around during the described CT procedure

11. During a post-examination quality review, which practice is essential before using a power injector through an implanted vascular access device?

- A. Assume every implanted port tolerates any flow for this CT examination
- B. Verify that the device is power-injectable and observe its rated limits
- C. Use the smallest available syringe only for the ordered imaging task
- D. Remove all extension tubing regardless of policy during the described CT procedure

12. Before releasing the images for interpretation, what is the main purpose of the preprocedure time-out for a CT-guided intervention?

- A. Select the reconstruction kernel for this CT examination for this CT examination
- B. Calculate the display field of view in the stated clinical situation
- C. Archive the prior examination for the ordered imaging task
- D. Confirm the correct patient, procedure, site, and available team agreement

13. At a multidisciplinary CT protocol meeting, which finding most strongly suggests contrast extravasation at an IV site?

- A. A metallic taste without swelling for this CT examination
- B. Brief generalized warmth in the stated clinical situation
- C. Localized swelling, pain, or tightness near the catheter
- D. A transient urge to urinate during the described CT procedure

14. While preparing the scanner for the first morning case, for an anxious but alert patient, which communication method best supports cooperation during CT?

- A. Avoid explaining noises or table motion for this CT examination
- B. Give several commands simultaneously in the stated clinical situation
- C. Use short explanations, confirm understanding, and rehearse breathing instructions
- D. Communicate only after scanning begins during the described CT procedure

15. An experienced technologist asks a trainee: which technique best reduces infection transmission when accessing an IV catheter?

- A. Wear clean gloves without hub disinfection for this CT examination
- B. Perform hand hygiene and disinfect the access hub using approved technique
- C. Wipe the hub only after injection for the ordered imaging task
- D. Reuse a syringe if the needle is changed during the described CT procedure

16. After reviewing the localizer and clinical history, a patient reports a previous severe iodinated contrast reaction. What should the technologist do first?

- A. Proceed because all nonionic agents are reaction-free for this CT examination
- B. Substitute barium intravenously in the stated clinical situation
- C. Ask the patient to choose the contrast dose
- D. Notify the radiologist and follow the facility's contrast-risk protocol

17. During a post-examination quality review, which patient statement requires clarification before CT colonography preparation?

- A. I cannot safely complete the prescribed bowel preparation for this CT examination
- B. I understand that insufflation may cause pressure in the stated clinical situation
- C. I will follow the dietary instructions for the ordered imaging task
- D. I know images are obtained in more than one position

18. Before releasing the images for interpretation, during transfer from a stretcher to the CT table, what is the safest approach?

- A. Pull the patient by the arms for this CT examination
- B. Ask an unstable patient to stand alone in the stated clinical situation
- C. Use sufficient trained staff and an appropriate transfer device
- D. Move before securing lines and drains during the described CT procedure

19. At a multidisciplinary CT protocol meeting, which documentation is most important after contrast administration through a peripheral IV?

- A. Contrast type, amount, route, injection details, and patient response
- B. Only the scanner model in the stated clinical situation
- C. Only the room temperature for the ordered imaging task
- D. The technologist's break schedule during the described CT procedure

20. While preparing the scanner for the first morning case, a patient's oxygen saturation drops during scanning. What is the technologist's priority?

- A. Finish all delayed reconstructions first for this CT examination
- B. Increase window width in the stated clinical situation in the stated clinical situation
- C. Move the patient without checking lines for the ordered imaging task
- D. Stop as necessary, assess the patient, and activate emergency support

21. An experienced technologist asks a trainee: why should radiopaque objects be removed from the scan region when possible?

- A. They always increase renal filtration for this CT examination
- B. They can obscure anatomy and create artifacts that reduce interpretation
- C. They prevent table movement for the ordered imaging task
- D. They automatically narrow the window width during the described CT procedure

22. After reviewing the localizer and clinical history, what is over-ranging in helical CT?

- A. A window level set above water for this CT examination
- B. A table moving outside the room in the stated clinical situation
- C. Additional exposure beyond the planned image range needed for interpolation
- D. Contrast extending beyond a vessel during the described CT procedure

23. During a post-examination quality review, which dose descriptor represents scanner output for a standardized CT acquisition?

- A. Hounsfield unit for this CT examination
- B. Window width in the stated clinical situation
- C. Pixel pitch for the ordered imaging task
- D. Volume CT dose index (CTDIvol)

24. Before releasing the images for interpretation, what does dose-length product primarily combine?

- A. Window width and level
- B. CTDIvol and scanned length
- C. Matrix and pixel size
- D. kVp and patient age only

25. At a multidisciplinary CT protocol meeting, which strategy best reduces dose for a small pediatric patient?

- A. Use size-appropriate technique and restrict coverage to the clinical question
- B. Use the adult protocol unchanged in the stated clinical situation
- C. Increase mAs to the system maximum for the ordered imaging task
- D. Add routine multiphase acquisitions during the described CT procedure

26. While preparing the scanner for the first morning case, automatic tube current modulation primarily adjusts output in response to what?

- A. The radiologist's monitor size
- B. The PACS storage capacity
- C. Patient attenuation and projection geometry
- D. The contrast vial label color

27. An experienced technologist asks a trainee: which action is most effective for personnel protection if staff must remain near the gantry?

- A. Stand beside the tube without shielding for this CT examination
- B. Hold the patient in the primary beam in the stated clinical situation
- C. Increase scan repetitions for the ordered imaging task
- D. Maximize distance, use appropriate shielding, and minimize exposure time

28. After reviewing the localizer and clinical history, why is centering the patient at isocenter important for dose optimization?

- A. It guarantees elimination of all noise for this CT examination
- B. It supports accurate localizer-based modulation and appropriate beam shaping
- C. It changes water to zero HU for the ordered imaging task
- D. It prevents every motion artifact during the described CT procedure

29. During a post-examination quality review, which statement about iterative reconstruction is most accurate?

- A. It always doubles spatial resolution for this CT examination for this CT examination
- B. It can reduce image noise and support lower-dose protocols when properly applied
- C. It removes the need for acquisition data for the ordered imaging task
- D. It increases dose by definition during the described CT procedure during the described CT procedure

30. Before releasing the images for interpretation, what is the purpose of a dose notification value on a CT scanner?

- A. Alert the operator when a planned dose index exceeds a configured value
- B. Automatically diagnose radiation injury in the stated clinical situation in the stated clinical situation
- C. Measure the patient's exact organ dose for the ordered imaging task
- D. Replace protocol review during the described CT procedure during the described CT procedure

31. At a multidisciplinary CT protocol meeting, which factor increases photoelectric absorption most strongly?

- A. Higher atomic number of the attenuating material
- B. Lower material density only in the stated clinical situation
- C. Greater source-to-patient distance for the ordered imaging task
- D. Lower photon interaction probability during the described CT procedure

32. While preparing the scanner for the first morning case, what is the primary role of filtration in the CT x-ray beam?

- A. Increase all low-energy photons for this CT examination for this CT examination
- B. Create electronic image noise in the stated clinical situation
- C. Remove lower-energy photons that add dose with limited image contribution
- D. Replace collimation during the described CT procedure during the described CT procedure

33. An experienced technologist asks a trainee: which practice best limits exposure during CT fluoroscopy?

- A. Keep the beam on continuously for this CT examination
- B. Place hands in the direct beam in the stated clinical situation
- C. Use maximum current for all guidance for the ordered imaging task
- D. Use intermittent activation, low-dose settings, shielding, and distance when feasible

34. After reviewing the localizer and clinical history, why should repeat scanning be documented and reviewed?

- A. It supports dose tracking and identification of preventable process failures
- B. It automatically removes the repeat dose in the stated clinical situation
- C. It changes DLP to zero for the ordered imaging task
- D. It guarantees accreditation during the described CT procedure during the described CT procedure

35. During a post-examination quality review, which statement best describes effective dose?

- A. The exact dose to every patient's organ
- B. A population-based risk-related quantity expressed in sieverts
- C. A CT pixel value in HU
- D. The detector's electronic gain during the described CT procedure

36. Before releasing the images for interpretation, how does increasing helical pitch generally affect dose when other settings are fixed and modulation does not compensate?

- A. A higher pitch always doubles dose
- B. Pitch has no relation to table travel
- C. A lower pitch eliminates radiation for the ordered imaging task
- D. A higher pitch generally reduces overlapping exposure

37. At a multidisciplinary CT protocol meeting, which patient positioning choice best protects radiosensitive anatomy while preserving the ordered study?

- A. Add coverage beyond all landmarks for this CT examination
- B. Repeat the localizer routinely in the stated clinical situation
- C. Use accurate centering and the clinically appropriate scan range
- D. Place shielding in a way that creates artifacts

38. While preparing the scanner for the first morning case, what is the relationship between x-ray photon frequency and wavelength?

- A. They are inversely related
- B. They always increase together
- C. They are identical quantities
- D. They are unrelated to energy

39. An experienced technologist asks a trainee: which interaction is the principal source of occupational scatter radiation during CT?

- A. Pair production in air
- B. Photodisintegration in the detector
- C. Nuclear fission in the tube
- D. Compton interaction within the patient

40. After reviewing the localizer and clinical history, what happens to radiation intensity when distance from a point source is doubled?

- A. It doubles for this CT examination
- B. It decreases to approximately one fourth
- C. It remains unchanged for the ordered imaging task
- D. It decreases to one half

41. During a post-examination quality review, which change generally lowers CT dose when other factors remain comparable?

- A. Increasing mAs for this CT examination
- B. Repeating the same acquisition
- C. Reducing tube current-time product
- D. Extending scan length

42. Before releasing the images for interpretation, why should scan length be limited to the anatomy clinically required?

- A. Unnecessary z-axis coverage irradiates tissues without adding needed information
- B. Longer coverage always improves spatial resolution in the stated clinical situation
- C. It prevents beam hardening for the ordered imaging task
- D. It eliminates overranging during the described CT procedure

43. At a multidisciplinary CT protocol meeting, what does display field of view primarily determine?

- A. The number of pilot questions for this CT examination
- B. The reconstructed area displayed and resulting pixel dimensions
- C. The IV catheter gauge for the ordered imaging task
- D. The tube target material during the described CT procedure

44. While preparing the scanner for the first morning case, which reconstruction is best for viewing anatomy in a plane different from acquisition?

- A. Scout localization only
- B. Hard-copy duplication
- C. Multiplanar reformation
- D. Dose notification

45. An experienced technologist asks a trainee: what does window level control on a CT image?

- A. The total scan time for this CT examination
- B. The tube heat capacity in the stated clinical situation
- C. The number of detectors for the ordered imaging task
- D. The center CT number of the displayed grayscale range

46. After reviewing the localizer and clinical history, what does window width control on a CT image?

- A. The patient's longitudinal position for this CT examination for this CT examination
- B. The contrast injection rate in the stated clinical situation in the stated clinical situation
- C. The gantry tilt limit for the ordered imaging task for the ordered imaging task
- D. The range of CT numbers mapped into visible shades of gray

47. During a post-examination quality review, which artifact commonly appears as concentric circles on axial CT images?

- A. Ring artifact

- B. Respiratory motion
- C. Partial volume averaging
- D. Stair-step artifact

48. Before releasing the images for interpretation, which action most directly reduces motion artifact?

- A. Use a wider display field for every scan
- B. Provide clear instructions and shorten acquisition when feasible
- C. Increase archive compression for the ordered imaging task
- D. Disable patient communication during the described CT procedure

49. At a multidisciplinary CT protocol meeting, what causes partial volume averaging?

- A. A detector receiving no photons anywhere
- B. A missing patient history in the stated clinical situation
- C. Different tissue attenuations combined within one voxel
- D. An incorrect appointment time during the described CT procedure

50. While preparing the scanner for the first morning case, which reconstruction choice usually improves high-contrast spatial detail?

- A. A smoother soft-tissue kernel for this CT examination
- B. A broader slice thickness in the stated clinical situation
- C. A lower matrix with the same DFOV
- D. A sharper reconstruction kernel during the described CT procedure

51. An experienced technologist asks a trainee: which choice generally reduces image noise?

- A. Increasing reconstructed slice thickness
- B. Reducing photon quantity markedly
- C. Using a sharper kernel

D. Decreasing voxel signal

52. After reviewing the localizer and clinical history, what is the typical CT number assigned to water?

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

53. During a post-examination quality review, which material typically has a CT number near -1000 HU?

- A. Air
- B. Water
- C. Muscle
- D. Cortical bone

54. Before releasing the images for interpretation, which dataset is required if new reconstructions may be needed later?

- A. Only a printed image
- B. Only the appointment record
- C. Raw projection data
- D. Only the dose notification

55. At a multidisciplinary CT protocol meeting, what is filtered backprojection?

- A. A contrast injection method for this CT examination for this CT examination
- B. A patient transfer method in the stated clinical situation
- C. A reconstruction method that filters and backprojects acquired projection data
- D. A PACS security policy during the described CT procedure

56. While preparing the scanner for the first morning case, which acquisition method collects data continuously while the table moves?

- A. Sequential step-and-shoot only
- B. Static radiography
- C. Manual film tomography
- D. Helical acquisition

57. An experienced technologist asks a trainee: why can thinner reconstructed slices appear noisier?

- A. They always contain more photons per voxel for this CT examination
- B. Each image voxel receives information from a smaller volume
- C. They remove quantum variation for the ordered imaging task
- D. They eliminate detector sampling during the described CT procedure

58. After reviewing the localizer and clinical history, which postprocessing method emphasizes the highest attenuation voxels along a viewing ray?

- A. Minimum intensity projection
- B. Window leveling
- C. Maximum intensity projection
- D. Lossless archiving

59. During a post-examination quality review, which rendering method assigns opacity and color across an entire voxel dataset?

- A. Scout radiography
- B. Volume rendering
- C. Simple magnification
- D. Dose modulation

60. Before releasing the images for interpretation, what is the primary purpose of DICOM?

- A. Determine contrast dosage for this CT examination
- B. Measure oxygen saturation in the stated clinical situation
- C. Control infection for the ordered imaging task
- D. Standardize medical image formatting and communication

61. At a multidisciplinary CT protocol meeting, what is the primary role of PACS or MIMPS?

- A. Store, retrieve, distribute, and display medical images
- B. Generate x-rays inside the tube in the stated clinical situation
- C. Administer IV medication for the ordered imaging task
- D. Perform venipuncture during the described CT procedure

62. While preparing the scanner for the first morning case, which quality-control test assesses uniform CT numbers across a homogeneous phantom?

- A. Patient consent review
- B. Contrast reaction grading
- C. Table transfer rehearsal
- D. Uniformity evaluation

63. An experienced technologist asks a trainee: what is CT number linearity intended to verify?

- A. Table speed never changes for this CT examination
- B. Every image has identical noise in the stated clinical situation
- C. Measured HU values track materials with different known attenuation
- D. All contrast agents are iso-osmolar during the described CT procedure

64. After reviewing the localizer and clinical history, which artifact is commonly associated with very dense metal?

- A. Uniform grayscale improvement for this CT examination
- B. Severe streaking from photon starvation and beam hardening
- C. Perfect edge preservation for the ordered imaging task
- D. Elimination of scatter during the described CT procedure

65. During a post-examination quality review, what is the benefit of dual-energy CT?

- A. Material characterization using attenuation differences at different spectra
- B. Elimination of all contrast media in the stated clinical situation
- C. Replacement of the detector array for the ordered imaging task
- D. Removal of every artifact during the described CT procedure

66. Before releasing the images for interpretation, which CT component converts transmitted x-ray energy into electrical signals?

- A. Detector array
- B. Patient table
- C. Laser positioning light
- D. Contrast warmer

67. At a multidisciplinary CT protocol meeting, what is the principal advantage of slip-ring technology in CT?

- A. Elimination of x-ray production for this CT examination
- B. Automatic patient consent in the stated clinical situation
- C. Direct creation of MRI signals for the ordered imaging task
- D. Continuous gantry rotation without winding high-voltage cables

68. While preparing the scanner for the first morning case, which parameter defines the anatomy included during acquisition reconstruction geometry?

- A. Window level for this CT examination
- B. Scan field of view
- C. Window width for the ordered imaging task
- D. Archive compression during the described CT procedure

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- A. The patient's longitudinal position for this CT examination for this CT examination
- B. The range of CT numbers mapped into visible shades of gray

- C. The contrast injection rate for the ordered imaging task for the ordered imaging task
- D. The gantry tilt limit during the described CT procedure during the described CT procedure

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80. While preparing the scanner for the first morning case, which dataset is required if new reconstructions may be needed later?

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- B. Only a printed image
- C. Only the appointment record

D. Only the dose notification

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- B. Window width in the stated clinical situation
- C. Scan field of view
- D. Archive compression during the described CT procedure

95. During a post-examination quality review, during CT-guided drainage, why are intermittent localization images obtained?

- A. Replace sterile technique for this CT examination for this CT examination
- B. Increase dose without guidance in the stated clinical situation
- C. Eliminate patient monitoring for the ordered imaging task
- D. Confirm device trajectory and position while limiting unnecessary exposure

96. Before releasing the images for interpretation, which postprocessing is particularly helpful for arterial runoff CTA?

- A. A single thick axial image only
- B. Thin multiplanar images and maximum intensity projections
- C. Minimum intensity projection of bowel gas
- D. Brain perfusion maps during the described CT procedure

97. At a multidisciplinary CT protocol meeting, for suspected aortic dissection, what must the protocol reliably show?

- A. The aortic lumen, intimal flap, branch vessels, and extent of disease
- B. Only the urinary bladder in the stated clinical situation in the stated clinical situation
- C. Only the maxillary sinuses for the ordered imaging task for the ordered imaging task
- D. Only the carpal bones during the described CT procedure during the described CT procedure

98. While preparing the scanner for the first morning case, which delay is useful when evaluating a suspected urinary bladder leak?

- A. A dedicated phase after the bladder is adequately opacified or filled
- B. Immediate coronary arterial phase in the stated clinical situation in the stated clinical situation
- C. Temporal bone noncontrast phase for the ordered imaging task for the ordered imaging task
- D. Early pulmonary arterial phase during the described CT procedure during the described CT procedure

99. An experienced technologist asks a trainee: for CT enterography, what is a key technical objective?

- A. Collapse all bowel loops for this CT examination
- B. Use only a skull bone kernel in the stated clinical situation
- C. Distend the small bowel and obtain enteric-phase enhancement
- D. Omit abdominal coverage during the described CT procedure

100. After reviewing the localizer and clinical history, which anatomy is the primary focus of a dedicated mandible CT?

- A. Pulmonary arteries for this CT examination for this CT examination
- B. Renal collecting systems in the stated clinical situation
- C. Coronary valves only for the ordered imaging task
- D. Mandibular cortex, medulla, dentition, and adjacent soft tissues

101. During a post-examination quality review, for sinus CT, which reconstruction set is most useful?

- A. Thick abdominal soft-tissue images for this CT examination

- B. Thin bone images with coronal and sagittal reformations
- C. Cardiac-gated cine images for the ordered imaging task
- D. Delayed urinary images during the described CT procedure

102. Before releasing the images for interpretation, which anatomy should be included in a routine CT chest for diffuse lung disease?

- A. Entire lungs from apices through costophrenic angles
- B. Only one upper lobe in the stated clinical situation
- C. Only the larynx for the ordered imaging task
- D. Only the adrenal glands during the described CT procedure

103. At a multidisciplinary CT protocol meeting, for suspected facial fractures, why are multiplanar and three-dimensional images helpful?

- A. They eliminate the source images for this CT examination
- B. They demonstrate fracture extent, displacement, and complex spatial relationships
- C. They replace patient stabilization for the ordered imaging task
- D. They prevent all dental artifact during the described CT procedure

104. While preparing the scanner for the first morning case, for routine noncontrast head CT, which plane is commonly used for axial image review?

- A. A plane excluding the posterior fossa for this CT examination
- B. A plane limited to the facial skin in the stated clinical situation
- C. A plane through only the mandible for the ordered imaging task
- D. Images aligned to an appropriate cranial reference with full brain coverage

105. An experienced technologist asks a trainee: which window is most useful for evaluating an acute intracranial hemorrhage?

- A. A very wide lung window only
- B. A narrow air-only window in the stated clinical situation
- C. A brain or soft-tissue window
- D. A cardiac calcium map only

106. After reviewing the localizer and clinical history, which reconstruction best evaluates fine temporal bone structures?

- A. Thick sections with a smooth abdominal kernel
- B. Thin sections with a high-resolution bone algorithm
- C. Large DFOV with soft-tissue averaging for the ordered imaging task
- D. Coronal localizer alone during the described CT procedure

107. During a post-examination quality review, for CT of the orbits, why are thin multiplanar images valuable?

- A. They eliminate the need for acquisition for this CT examination
- B. They prevent every eye motion in the stated clinical situation
- C. They show small structures and relationships in multiple planes
- D. They replace clinical history during the described CT procedure

108. Before releasing the images for interpretation, which study is designed to assess cerebral blood flow dynamics?

- A. CT brain perfusion
- B. Routine sinus CT
- C. Noncontrast knee CT
- D. CT colonography

109. At a multidisciplinary CT protocol meeting, for suspected cervical spine trauma, what is essential?

- A. Coverage of only one vertebral body for this CT examination
- B. A soft-tissue neck scan without bone review in the stated clinical situation
- C. Delayed bladder images for the ordered imaging task
- D. Thin-section coverage with multiplanar reformations through the entire region

110. While preparing the scanner for the first morning case, which presentation best displays a scoliotic spine along its curved axis?

- A. Curved or targeted multiplanar reformation
- B. Single thick axial image
- C. Cardiac calcium score for the ordered imaging task
- D. Minimum intensity lung projection

111. An experienced technologist asks a trainee: for CT arthrography, where is contrast administered?

- A. Into the urinary bladder for this CT examination
- B. Into the joint space under the ordered technique
- C. Into the pleural cavity for the ordered imaging task
- D. Onto intact skin only during the described CT procedure

112. After reviewing the localizer and clinical history, which reconstruction is most appropriate for evaluating a small extremity fracture?

- A. Thick soft-tissue images only for this CT examination
- B. A lung kernel without targeted DFOV
- C. An abdominal delayed phase only
- D. Thin bone-algorithm images with multiplanar reformations

113. During a post-examination quality review, what is the main purpose of CTA of the head and neck?

- A. Measure bowel transit for this CT examination for this CT examination

- B. Assess bladder emptying only in the stated clinical situation
- C. Evaluate arterial anatomy and vascular abnormalities after timed contrast
- D. Replace all noncontrast imaging during the described CT procedure

114. Before releasing the images for interpretation, which phase best demonstrates many hypervascular liver lesions?

- A. Noncontrast phase only
- B. Very delayed urinary phase
- C. Late arterial phase
- D. Unenhanced lung screening phase

115. At a multidisciplinary CT protocol meeting, which phase is central to routine portal venous evaluation of abdominal organs?

- A. Portal venous phase
- B. Coronary calcium phase
- C. Temporal bone phase
- D. CT colonography insufflation phase

116. While preparing the scanner for the first morning case, for suspected renal calculus, which initial CT approach is commonly appropriate?

- A. Routine positive IV contrast only
- B. Cardiac-gated chest CT in the stated clinical situation
- C. Contrast-enhanced temporal bone CT for the ordered imaging task
- D. Noncontrast thin-section abdomen and pelvis protocol

117. An experienced technologist asks a trainee: what is the purpose of an excretory delay during CT urography?

- A. Maximize coronary motion for this CT examination
- B. Opacify the collecting systems and ureters
- C. Inflate the colon for the ordered imaging task
- D. Evaluate temporal bone ossicles during the described CT procedure

118. After reviewing the localizer and clinical history, which CT finding is a classic concern in acute appendicitis?

- A. Normal appendix containing air without inflammation
- B. Isolated coronary calcification in the stated clinical situation
- C. Dilated inflamed appendix with periappendiceal inflammatory change
- D. Symmetric aerated mastoid cells during the described CT procedure

119. During a post-examination quality review, what preparation is fundamental for CT colonography?

- A. Coronary beta blockade only for this CT examination
- B. Intrathecal contrast only in the stated clinical situation
- C. No explanation of position changes for the ordered imaging task
- D. Adequate bowel preparation and controlled colonic distention

120. Before releasing the images for interpretation, for CT pulmonary angiography, where should bolus timing be targeted?

- A. Pulmonary arterial enhancement
- B. Renal collecting system excretion
- C. Portal venous liver enhancement
- D. Delayed bladder filling

121. At a multidisciplinary CT protocol meeting, which ECG-gating strategy usually acquires data only during selected cardiac phases?

- A. Ungated helical abdomen imaging
- B. Prospective ECG triggering in the stated clinical situation
- C. Routine delayed pelvis imaging
- D. Continuous brain perfusion without ECG

122. While preparing the scanner for the first morning case, which ECG-gating strategy records data throughout more of the cardiac cycle for phase selection?

- A. Retrospective ECG gating
- B. Single noncontrast head acquisition
- C. Sequential renal stone imaging
- D. Static sinus imaging

123. An experienced technologist asks a trainee: what is the goal of high-resolution CT of the lungs?

- A. Maximize bowel opacification for this CT examination for this CT examination
- B. Measure urinary excretion in the stated clinical situation
- C. Display only the sternum for the ordered imaging task
- D. Depict fine interstitial and small-airway detail with thin sections

124. After reviewing the localizer and clinical history, which feature distinguishes low-dose lung cancer screening CT?

- A. Routine multiphase contrast abdomen scanning for this CT examination
- B. A low-dose noncontrast chest protocol for eligible asymptomatic patients
- C. Intrathecal contrast administration for the ordered imaging task
- D. Immediate CT-guided biopsy for everyone during the described CT procedure

125. During a post-examination quality review, for soft-tissue neck CT with contrast, what is a key timing goal?

- A. Renal excretory opacification for this CT examination for this CT examination
- B. Maximum colonic distention in the stated clinical situation in the stated clinical situation
- C. Uniform enhancement of neck soft tissues and vessels without excessive artifact
- D. Isolated calcaneal enhancement during the described CT procedure during the described CT procedure

126. Before releasing the images for interpretation, why may arms be raised for routine chest CT when the patient can safely do so?

- A. To increase respiratory motion for this CT examination for this CT examination
- B. To obscure the lung apices in the stated clinical situation
- C. To reduce beam-hardening artifact and keep arms outside the chest field
- D. To prevent table translation during the described CT procedure during the described CT procedure

127. At a multidisciplinary CT protocol meeting, which CT phase best characterizes adrenal washout when a dedicated protocol is ordered?

- A. Unenhanced, enhanced, and appropriately delayed measurements
- B. One lung-window image only in the stated clinical situation
- C. Coronary calcium scoring only for the ordered imaging task
- D. A noncontrast sinus series during the described CT procedure

128. While preparing the scanner for the first morning case, for multiphase pancreas CT, why is thin-section arterial or pancreatic-phase imaging useful?

- A. It measures middle-ear ossicles for this CT examination
- B. It improves depiction of pancreatic enhancement and nearby vessels
- C. It replaces all portal venous images for the ordered imaging task
- D. It avoids any breath-hold during the described CT procedure

129. An experienced technologist asks a trainee: what is the purpose of rectal contrast in selected colorectal CT examinations?

- A. Enhance the coronary arteries for this CT examination
- B. Fill the renal collecting systems in the stated clinical situation
- C. Outline the subarachnoid space for the ordered imaging task
- D. Opacify or distend the colorectal lumen when clinically indicated

130. After reviewing the localizer and clinical history, for CT-guided biopsy, what determines the safest needle path?

- A. The shortest route regardless of anatomy for this CT examination
- B. A path through major vessels in the stated clinical situation
- C. A path chosen before reviewing images for the ordered imaging task
- D. A route that reaches the target while avoiding critical structures

131. During a post-examination quality review, during CT-guided drainage, why are intermittent localization images obtained?

- A. Confirm device trajectory and position while limiting unnecessary exposure
- B. Replace sterile technique in the stated clinical situation
- C. Increase dose without guidance for the ordered imaging task
- D. Eliminate patient monitoring during the described CT procedure

132. Before releasing the images for interpretation, which postprocessing is particularly helpful for arterial runoff CTA?

- A. A single thick axial image only
- B. Thin multiplanar images and maximum intensity projections
- C. Minimum intensity projection of bowel gas
- D. Brain perfusion maps during the described CT procedure

133. At a multidisciplinary CT protocol meeting, for suspected aortic dissection, what must the protocol reliably show?

- A. Only the urinary bladder for this CT examination for this CT examination
- B. Only the maxillary sinuses in the stated clinical situation in the stated clinical situation
- C. The aortic lumen, intimal flap, branch vessels, and extent of disease
- D. Only the carpal bones during the described CT procedure during the described CT procedure

134. While preparing the scanner for the first morning case, which delay is useful when evaluating a suspected urinary bladder leak?

- A. Immediate coronary arterial phase for this CT examination for this CT examination
- B. Temporal bone noncontrast phase in the stated clinical situation in the stated clinical situation
- C. Early pulmonary arterial phase for the ordered imaging task for the ordered imaging task
- D. A dedicated phase after the bladder is adequately opacified or filled

135. An experienced technologist asks a trainee: for CT enterography, what is a key technical objective?

- A. Collapse all bowel loops for this CT examination
- B. Distend the small bowel and obtain enteric-phase enhancement
- C. Use only a skull bone kernel for the ordered imaging task
- D. Omit abdominal coverage during the described CT procedure

136. After reviewing the localizer and clinical history, which anatomy is the primary focus of a dedicated mandible CT?

- A. Pulmonary arteries for this CT examination for this CT examination
- B. Renal collecting systems in the stated clinical situation
- C. Mandibular cortex, medulla, dentition, and adjacent soft tissues
- D. Coronary valves only during the described CT procedure

137. During a post-examination quality review, for sinus CT, which reconstruction set is most useful?

- A. Thin bone images with coronal and sagittal reformations

- B. Thick abdominal soft-tissue images in the stated clinical situation
- C. Cardiac-gated cine images for the ordered imaging task
- D. Delayed urinary images during the described CT procedure

138. Before releasing the images for interpretation, which anatomy should be included in a routine CT chest for diffuse lung disease?

- A. Only one upper lobe for this CT examination
- B. Only the larynx in the stated clinical situation
- C. Entire lungs from apices through costophrenic angles
- D. Only the adrenal glands during the described CT procedure

139. At a multidisciplinary CT protocol meeting, for suspected facial fractures, why are multiplanar and three-dimensional images helpful?

- A. They demonstrate fracture extent, displacement, and complex spatial relationships
- B. They eliminate the source images in the stated clinical situation
- C. They replace patient stabilization for the ordered imaging task
- D. They prevent all dental artifact during the described CT procedure

140. While preparing the scanner for the first morning case, for routine noncontrast head CT, which plane is commonly used for axial image review?

- A. A plane excluding the posterior fossa for this CT examination
- B. Images aligned to an appropriate cranial reference with full brain coverage
- C. A plane limited to the facial skin for the ordered imaging task
- D. A plane through only the mandible during the described CT procedure

141. An experienced technologist asks a trainee: which window is most useful for evaluating an acute intracranial hemorrhage?

- A. A very wide lung window only
- B. A narrow air-only window in the stated clinical situation
- C. A cardiac calcium map only
- D. A brain or soft-tissue window

142. After reviewing the localizer and clinical history, which reconstruction best evaluates fine temporal bone structures?

- A. Thick sections with a smooth abdominal kernel
- B. Thin sections with a high-resolution bone algorithm
- C. Large DFOV with soft-tissue averaging for the ordered imaging task
- D. Coronal localizer alone during the described CT procedure

143. During a post-examination quality review, for CT of the orbits, why are thin multiplanar images valuable?

- A. They eliminate the need for acquisition for this CT examination
- B. They prevent every eye motion in the stated clinical situation
- C. They replace clinical history for the ordered imaging task
- D. They show small structures and relationships in multiple planes

144. Before releasing the images for interpretation, which study is designed to assess cerebral blood flow dynamics?

- A. Routine sinus CT
- B. Noncontrast knee CT
- C. CT brain perfusion
- D. CT colonography

145. At a multidisciplinary CT protocol meeting, for suspected cervical spine trauma, what is essential?

- A. Thin-section coverage with multiplanar reformations through the entire region
- B. Coverage of only one vertebral body in the stated clinical situation
- C. A soft-tissue neck scan without bone review for the ordered imaging task
- D. Delayed bladder images during the described CT procedure

146. While preparing the scanner for the first morning case, which presentation best displays a scoliotic spine along its curved axis?

- A. Curved or targeted multiplanar reformation
- B. Single thick axial image
- C. Cardiac calcium score for the ordered imaging task
- D. Minimum intensity lung projection

147. An experienced technologist asks a trainee: for CT arthrography, where is contrast administered?

- A. Into the urinary bladder for this CT examination
- B. Into the pleural cavity in the stated clinical situation
- C. Into the joint space under the ordered technique
- D. Onto intact skin only during the described CT procedure

148. After reviewing the localizer and clinical history, which reconstruction is most appropriate for evaluating a small extremity fracture?

- A. Thick soft-tissue images only for this CT examination
- B. Thin bone-algorithm images with multiplanar reformations
- C. A lung kernel without targeted DFOV
- D. An abdominal delayed phase only

149. During a post-examination quality review, what is the main purpose of CTA of the head and neck?

- A. Measure bowel transit for this CT examination for this CT examination

- B. Assess bladder emptying only in the stated clinical situation
- C. Replace all noncontrast imaging for the ordered imaging task
- D. Evaluate arterial anatomy and vascular abnormalities after timed contrast

150. Before releasing the images for interpretation, which phase best demonstrates many hypervascular liver lesions?

- A. Noncontrast phase only
- B. Very delayed urinary phase
- C. Unenhanced lung screening phase
- D. Late arterial phase

151. At a multidisciplinary CT protocol meeting, which phase is central to routine portal venous evaluation of abdominal organs?

- A. Portal venous phase
- B. Coronary calcium phase
- C. Temporal bone phase
- D. CT colonography insufflation phase

152. While preparing the scanner for the first morning case, for suspected renal calculus, which initial CT approach is commonly appropriate?

- A. Routine positive IV contrast only
- B. Cardiac-gated chest CT in the stated clinical situation
- C. Noncontrast thin-section abdomen and pelvis protocol
- D. Contrast-enhanced temporal bone CT during the described CT procedure

153. An experienced technologist asks a trainee: what is the purpose of an excretory delay during CT urography?

- A. Maximize coronary motion for this CT examination
- B. Opacify the collecting systems and ureters
- C. Inflate the colon for the ordered imaging task
- D. Evaluate temporal bone ossicles during the described CT procedure

154. After reviewing the localizer and clinical history, which CT finding is a classic concern in acute appendicitis?

- A. Dilated inflamed appendix with periappendiceal inflammatory change
- B. Normal appendix containing air without inflammation
- C. Isolated coronary calcification for the ordered imaging task
- D. Symmetric aerated mastoid cells during the described CT procedure

155. During a post-examination quality review, what preparation is fundamental for CT colonography?

- A. Coronary beta blockade only for this CT examination
- B. Adequate bowel preparation and controlled colonic distention
- C. Intrathecal contrast only for the ordered imaging task
- D. No explanation of position changes during the described CT procedure

156. Before releasing the images for interpretation, for CT pulmonary angiography, where should bolus timing be targeted?

- A. Renal collecting system excretion
- B. Portal venous liver enhancement
- C. Delayed bladder filling
- D. Pulmonary arterial enhancement

157. At a multidisciplinary CT protocol meeting, which ECG-gating strategy usually acquires data only during selected cardiac phases?

- A. Ungated helical abdomen imaging
- B. Routine delayed pelvis imaging
- C. Prospective ECG triggering for the ordered imaging task
- D. Continuous brain perfusion without ECG

158. While preparing the scanner for the first morning case, which ECG-gating strategy records data throughout more of the cardiac cycle for phase selection?

- A. Single noncontrast head acquisition
- B. Sequential renal stone imaging
- C. Static sinus imaging
- D. Retrospective ECG gating

159. An experienced technologist asks a trainee: what is the goal of high-resolution CT of the lungs?

- A. Depict fine interstitial and small-airway detail with thin sections
- B. Maximize bowel opacification in the stated clinical situation
- C. Measure urinary excretion for the ordered imaging task
- D. Display only the sternum during the described CT procedure

160. After reviewing the localizer and clinical history, which feature distinguishes low-dose lung cancer screening CT?

- A. Routine multiphase contrast abdomen scanning for this CT examination
- B. Intrathecal contrast administration in the stated clinical situation
- C. A low-dose noncontrast chest protocol for eligible asymptomatic patients
- D. Immediate CT-guided biopsy for everyone during the described CT procedure

161. During a post-examination quality review, for soft-tissue neck CT with contrast, what is a key timing goal?

- A. Renal excretory opacification for this CT examination for this CT examination
- B. Uniform enhancement of neck soft tissues and vessels without excessive artifact
- C. Maximum colonic distention for the ordered imaging task for the ordered imaging task
- D. Isolated calcaneal enhancement during the described CT procedure during the described CT procedure

162. Before releasing the images for interpretation, why may arms be raised for routine chest CT when the patient can safely do so?

- A. To increase respiratory motion for this CT examination for this CT examination
- B. To obscure the lung apices in the stated clinical situation
- C. To prevent table translation for the ordered imaging task for the ordered imaging task
- D. To reduce beam-hardening artifact and keep arms outside the chest field

163. At a multidisciplinary CT protocol meeting, which CT phase best characterizes adrenal washout when a dedicated protocol is ordered?

- A. One lung-window image only for this CT examination
- B. Unenhanced, enhanced, and appropriately delayed measurements
- C. Coronary calcium scoring only for the ordered imaging task
- D. A noncontrast sinus series during the described CT procedure

164. While preparing the scanner for the first morning case, for multiphase pancreas CT, why is thin-section arterial or pancreatic-phase imaging useful?

- A. It measures middle-ear ossicles for this CT examination
- B. It replaces all portal venous images in the stated clinical situation
- C. It improves depiction of pancreatic enhancement and nearby vessels
- D. It avoids any breath-hold during the described CT procedure

165. An experienced technologist asks a trainee: what is the purpose of rectal contrast in selected colorectal CT examinations?

- A. Opacify or distend the colorectal lumen when clinically indicated
- B. Enhance the coronary arteries in the stated clinical situation
- C. Fill the renal collecting systems for the ordered imaging task
- D. Outline the subarachnoid space during the described CT procedure

Practice Exam 3: Answer Key and Explanations

- 1. D** — Follow the facility's pregnancy-screening and radiologist consultation process is appropriate because screening supports justified imaging and protocol decisions while recognizing that urgent medically necessary examinations may still proceed. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.
- 2. B** — It advances contrast through the tubing and may improve bolus utilization is appropriate because saline clears residual contrast from the line and can compact the bolus without adding more iodine. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.
- 3. D** — Administration through the gastrointestinal tract is the most appropriate choice because oral contrast is introduced into the gastrointestinal tract to help distinguish bowel lumen from adjacent structures. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.
- 4. C** — Identify drugs or conditions that require protocol-specific management is the most appropriate choice because medication history can reveal interactions, contraindications, or postprocedure instructions that affect safe contrast use. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.
- 5. A** — Confirm patency according to policy and inspect for pain, swelling, or leakage is appropriate because a patent, intact access site lowers the risk of infiltration and allows prompt recognition of a problem. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.
- 6. C** — Observe as directed and document the reaction and interventions is appropriate because continued observation and accurate documentation support patient safety, future screening, and communication across care encounters. The distractors address different CT concerns and do not satisfy this scenario.

Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

7. B — The patient receives understandable information about purpose, risks, benefits, and alternatives is appropriate because valid informed consent depends on meaningful disclosure and voluntary agreement before the procedure and relevant sedation. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

8. A — Estimated glomerular filtration rate (eGFR) is the most appropriate choice because eGFR estimates kidney filtration and helps identify patients who may need additional contrast-risk assessment. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

9. D — Ask the patient to explain the procedure in their own words is appropriate because teach-back reveals whether the explanation was understood and allows misunderstandings to be corrected. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

10. A — Stop the injection, assess the patient, and summon appropriate assistance is the most appropriate choice because stopping exposure and assessing airway, breathing, circulation, and symptom severity precede treatment decisions. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

11. B — Verify that the device is power-injectable and observe its rated limits is appropriate because device labeling and rated pressure and flow limits determine whether powered injection can be performed safely. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

12. D — Confirm the correct patient, procedure, site, and available team agreement is the most appropriate choice because the time-out prevents wrong-patient, wrong-procedure, and wrong-site events through active team confirmation. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

13. C — Localized swelling, pain, or tightness near the catheter is the most appropriate choice because extravasated fluid accumulates in soft tissues and commonly produces focal swelling, discomfort, or pressure. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

14. C — Use short explanations, confirm understanding, and rehearse breathing instructions is the most appropriate choice because clear, paced instructions reduce uncertainty and improve the patient's ability to follow timing-dependent commands. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

15. B — Perform hand hygiene and disinfect the access hub using approved technique is appropriate because hand hygiene and proper hub disinfection interrupt organisms from reaching the catheter and bloodstream. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

16. D — Notify the radiologist and follow the facility's contrast-risk protocol is appropriate because a prior severe reaction requires documented risk evaluation and an authorized plan before contrast is administered. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

17. A — I cannot safely complete the prescribed bowel preparation is appropriate because inability to complete preparation can affect safety and diagnostic quality and must be addressed before proceeding. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

18. C — Use sufficient trained staff and an appropriate transfer device is appropriate because adequate help and transfer equipment protect the patient and staff while preserving attached medical devices. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

19. A — Contrast type, amount, route, injection details, and patient response is the most appropriate choice because complete administration documentation supports continuity of care, traceability, and response to later complications. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

20. D — Stop as necessary, assess the patient, and activate emergency support is appropriate because a change in oxygenation may signal immediate clinical deterioration, so patient assessment and emergency response take precedence. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

21. B — They can obscure anatomy and create artifacts that reduce interpretation is appropriate because external dense objects attenuate the beam and may create streaks or hide clinically important structures. The distractors address different CT concerns and do not satisfy this scenario. Understanding the

distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

22. C — Additional exposure beyond the planned image range needed for interpolation is appropriate because helical reconstruction requires data outside the prescribed image volume at the beginning and end. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

23. D — Volume CT dose index (CTDIvol) is the most appropriate choice because CTDIvol is a standardized index of scanner radiation output and is not an individual patient's exact absorbed dose. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

24. B — CTDIvol and scanned length is the most appropriate choice because DLP reflects scanner output across the longitudinal extent by multiplying CTDIvol by scan length. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

25. A — Use size-appropriate technique and restrict coverage to the clinical question is the most appropriate choice because patient-size technique and focused coverage avoid unnecessary output while retaining needed diagnostic information. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

26. C — Patient attenuation and projection geometry is the most appropriate choice because modulation changes tube current as attenuation varies across body regions and projection angles. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

27. D — Maximize distance, use appropriate shielding, and minimize exposure time is the most appropriate choice because time, distance, and shielding remain the core methods for limiting occupational exposure. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

28. B — It supports accurate localizer-based modulation and appropriate beam shaping is appropriate because off-centering can distort patient size estimates and reduce the effectiveness of bow-tie filtration and modulation. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

29. B — It can reduce image noise and support lower-dose protocols when properly applied is appropriate because iterative methods model data and noise to improve image appearance compared with conventional reconstruction under selected conditions. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

30. A — Alert the operator when a planned dose index exceeds a configured value is appropriate because notifications prompt review before scanning but do not themselves determine appropriateness or exact patient dose. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

31. A — Higher atomic number of the attenuating material is the most appropriate choice because photoelectric probability rises strongly with atomic number and decreases as photon energy increases. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

32. C — Remove lower-energy photons that add dose with limited image contribution is the most appropriate choice because filtration hardens the beam by preferentially removing photons likely to be absorbed superficially. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

33. D — Use intermittent activation, low-dose settings, shielding, and distance when feasible is appropriate because CT fluoroscopy can produce concentrated dose, so careful beam time and geometry are essential. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

34. A — It supports dose tracking and identification of preventable process failures is appropriate because repeat analysis helps distinguish necessary additional imaging from avoidable errors and guides quality improvement. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

35. B — A population-based risk-related quantity expressed in sieverts is appropriate because effective dose weights organ doses for radiation sensitivity and is useful for broad comparisons, not individual risk prediction. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

36. D — A higher pitch generally reduces overlapping exposure is appropriate because greater table travel per rotation spreads exposure over more anatomy and can lower dose under fixed-output conditions. The

distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

37. C — Use accurate centering and the clinically appropriate scan range is the most appropriate choice because precise positioning and justified coverage reduce avoidable exposure without compromising the needed examination. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

38. A — They are inversely related is the most appropriate choice because electromagnetic radiation travels at a constant speed, so increasing frequency corresponds to decreasing wavelength. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

39. D — Compton interaction within the patient is the most appropriate choice because Compton interactions redirect photons and are the main source of scatter at diagnostic x-ray energies. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

40. B — It decreases to approximately one fourth is the most appropriate choice because the inverse square law makes intensity inversely proportional to the square of distance. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

41. C — Reducing tube current-time product is the most appropriate choice because fewer tube-current-time photons reduce radiation output, although image noise may increase. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

42. A — Unnecessary z-axis coverage irradiates tissues without adding needed information is the most appropriate choice because dose accumulates throughout the exposed length, so avoidable coverage adds exposure without clinical benefit. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

43. B — The reconstructed area displayed and resulting pixel dimensions is the most appropriate choice because DFOV maps the selected reconstruction area across the image matrix and influences pixel size. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

44. C — Multiplanar reformation is the most appropriate choice because MPR reformats volumetric data into coronal, sagittal, oblique, or curved planes. The distractors address different CT concerns and do not

satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

45. D — The center CT number of the displayed grayscale range is the most appropriate choice because window level centers the display range over the tissue attenuation of interest. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

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50. D — A sharper reconstruction kernel is the most appropriate choice because sharp kernels preserve high-frequency edge information but generally increase visible image noise. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

51. A — Increasing reconstructed slice thickness is the most appropriate choice because thicker sections combine more data and improve signal-to-noise, although z-axis detail declines. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

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53. A — Air is the most appropriate choice because air provides minimal attenuation and anchors the low end of the Hounsfield scale near negative one thousand. The distractors address different CT concerns and

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112. D — Thin bone-algorithm images with multiplanar reformations is the most appropriate choice because thin high-resolution data and aligned reformations improve depiction of fracture planes and displacement. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

113. C — Evaluate arterial anatomy and vascular abnormalities after timed contrast is the most appropriate choice because properly timed arterial enhancement supports evaluation of stenosis, occlusion, aneurysm, or injury. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

114. C — Late arterial phase is the most appropriate choice because hypervascular lesions may enhance strongly relative to liver parenchyma during arterial-dominant timing. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

115. A — Portal venous phase is the most appropriate choice because portal venous timing provides broad parenchymal enhancement and portal venous opacification. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

116. D — Noncontrast thin-section abdomen and pelvis protocol is the most appropriate choice because urinary calculi are usually conspicuous without IV contrast, which can obscure small stones. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

117. B — Opacify the collecting systems and ureters is the most appropriate choice because delayed renal excretion carries iodinated contrast into the urothelial tract for luminal assessment. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

118. C — Dilated inflamed appendix with periappendiceal inflammatory change is the most appropriate choice because appendiceal enlargement and adjacent fat stranding support inflammation in the appropriate clinical setting. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

119. D — Adequate bowel preparation and controlled colonic distention is appropriate because cleaning or tagging residual contents and distending the colon allow the wall and lumen to be evaluated. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

120. A — Pulmonary arterial enhancement is the most appropriate choice because the acquisition must coincide with dense contrast in the pulmonary arteries to evaluate emboli. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

121. B — Prospective ECG triggering is the most appropriate choice because prospective triggering activates acquisition at predetermined portions of the cardiac cycle. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

122. A — Retrospective ECG gating is the most appropriate choice because retrospective gating pairs continuous or helical data with ECG information for reconstruction at chosen phases. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

123. D — Depict fine interstitial and small-airway detail with thin sections is the most appropriate choice because thin high-spatial-frequency reconstructions improve evaluation of pulmonary parenchymal patterns. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

124. B — A low-dose noncontrast chest protocol for eligible asymptomatic patients is the most appropriate choice because screening protocols seek adequate nodule detection while limiting radiation in a defined eligible population. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

125. C — Uniform enhancement of neck soft tissues and vessels without excessive artifact is appropriate because appropriate timing and injection technique support evaluation of mucosal spaces, nodes, and vasculature. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

126. C — To reduce beam-hardening artifact and keep arms outside the chest field is the most appropriate choice because arms alongside the thorax can increase attenuation, streaks, and required tube output. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

127. A — Unenhanced, enhanced, and appropriately delayed measurements is the most appropriate choice because serial attenuation measurements allow calculation of contrast washout from an adrenal lesion. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

128. B — It improves depiction of pancreatic enhancement and nearby vessels is the most appropriate choice because carefully timed thin data can reveal hypoenhancing tumors and vascular involvement. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

129. D — Opacify or distend the colorectal lumen when clinically indicated is the most appropriate choice because rectal administration can clarify bowel lumen, leaks, fistulas, or distal obstruction in selected cases. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

130. D — A route that reaches the target while avoiding critical structures is appropriate because planning uses cross-sectional anatomy to balance access length, target sampling, and avoidance of vulnerable structures. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

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148. B — Thin bone-algorithm images with multiplanar reformations is the most appropriate choice because thin high-resolution data and aligned reformations improve depiction of fracture planes and displacement. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

149. D — Evaluate arterial anatomy and vascular abnormalities after timed contrast is the most appropriate choice because properly timed arterial enhancement supports evaluation of stenosis, occlusion, aneurysm, or injury. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

150. D — Late arterial phase is the most appropriate choice because hypervascular lesions may enhance strongly relative to liver parenchyma during arterial-dominant timing. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

151. A — Portal venous phase is the most appropriate choice because portal venous timing provides broad parenchymal enhancement and portal venous opacification. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

152. C — Noncontrast thin-section abdomen and pelvis protocol is the most appropriate choice because urinary calculi are usually conspicuous without IV contrast, which can obscure small stones. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

153. B — Opacify the collecting systems and ureters is the most appropriate choice because delayed renal excretion carries iodinated contrast into the urothelial tract for luminal assessment. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

154. A — Dilated inflamed appendix with periappendiceal inflammatory change is the most appropriate choice because appendiceal enlargement and adjacent fat stranding support inflammation in the appropriate clinical setting. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

155. B — Adequate bowel preparation and controlled colonic distention is appropriate because cleaning or tagging residual contents and distending the colon allow the wall and lumen to be evaluated. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

156. D — Pulmonary arterial enhancement is the most appropriate choice because the acquisition must coincide with dense contrast in the pulmonary arteries to evaluate emboli. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

157. C — Prospective ECG triggering is the most appropriate choice because prospective triggering activates acquisition at predetermined portions of the cardiac cycle. The distractors address different CT

concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

158. D — Retrospective ECG gating is the most appropriate choice because retrospective gating pairs continuous or helical data with ECG information for reconstruction at chosen phases. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

159. A — Depict fine interstitial and small-airway detail with thin sections is the most appropriate choice because thin high-spatial-frequency reconstructions improve evaluation of pulmonary parenchymal patterns. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

160. C — A low-dose noncontrast chest protocol for eligible asymptomatic patients is the most appropriate choice because screening protocols seek adequate nodule detection while limiting radiation in a defined eligible population. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

161. B — Uniform enhancement of neck soft tissues and vessels without excessive artifact is appropriate because appropriate timing and injection technique support evaluation of mucosal spaces, nodes, and vasculature. The distractors address different CT concerns and do not satisfy this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

162. D — To reduce beam-hardening artifact and keep arms outside the chest field is the most appropriate choice because arms alongside the thorax can increase attenuation, streaks, and required tube output. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

163. B — Unenhanced, enhanced, and appropriately delayed measurements is the most appropriate choice because serial attenuation measurements allow calculation of contrast washout from an adrenal lesion. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

164. C — It improves depiction of pancreatic enhancement and nearby vessels is the most appropriate choice because carefully timed thin data can reveal hypoenhancing tumors and vascular involvement. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

165. A — Opacify or distend the colorectal lumen when clinically indicated is the most appropriate choice because rectal administration can clarify bowel lumen, leaks, fistulas, or distal obstruction in selected cases. The distractors address different CT concerns and do not satisfy the requirement in this scenario. Understanding the distinction supports sound protocol selection, useful diagnostic images, efficient workflow, and safe patient care.

