Sonography 5th edition Curry Test Bank

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Chapter 2: Ultrasound Instrumentation: "Knobology," Imaging Processing, and Storage
Curry/Prince: Sonography, 5th Edition

MULTIPLE CHOICE

1. The alphanumeric keyboard is used to
   a. enter new patient information.
   b. perform the initial configuration at installation of the ultrasound unit.
   c. indicate which patient will be examined next.
   d. house the sonologist workstation.

   ANS: A
   The alphanumeric keyboard controls allow the sonographer to enter the patient's name, ID number, and full screen annotation. The keyboard also may include specific function keys.

   OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

2. Annotation On/Off
   a. erases the last character to the left of the cursor.
   b. erases all user-entered annotations, starting at the cursor's location.
   c. clears the patient's ID number and stored images.
   d. allows comments to be entered on the screen.

   ANS: D
   When turned on, Annotation On/Off (also called *Comments On/Off*) allows annotation, or comments, to be entered on the screen.

   OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

3. The HELP menu provides quick access to the
   a. on/off switch.
   b. primary imaging controls.
   c. reference manual.
   d. clinical application specialist.

   ANS: C
   Some systems employ a HELP menu to access and provide a quick reference manual to the system usage. This is often accessed through a HELP key located directly on the keyboard or is a function key located on the top row of the keyboard.

   OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

4. The frequency control ensures that
   a. imaging depth is appropriate.
   b. tissue resolution is adequate.
   c. the right focal zone is used.
   d. the image freezes.

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ANS: B
The frequency control allows the sonographer to select the imaging frequency best suited to the patient's anatomy and the type of examination. Better tissue resolution of superficial structures is attained with higher frequencies. A lower imaging frequency is used for deeper structures, but image definition is lost for more superficial structures.

OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

5. The TGC control can strengthen echoes that are
   a. returning from deep tissues.
   b. emitted from the transducer to deep tissues.
   c. returning from superficial tissues.
   d. emitted from the transducer to superficial tissues.

ANS: A
The TGC control equalizes the differences in received echo amplitudes due to reflector depth. Returning echoes from deep in the body are amplified so that information on deeper structures can be received.

OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

6. When the focal zone indicator is set too deep for the organ being examined
   a. the echogenicity is too bright.
   b. the resolution is suboptimal.
   c. the light output is inadequate.
   d. the organ needs to be repositioned.

ANS: B
The focal zone should be set at the level of the area of interest. It provides the correct scan depth, ensuring optimal visualization of the target organ.

OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

7. The posterior border of the gallbladder cannot be seen on sagittal view; it appears to be cut off. Which control is most likely to correct this?
   a. Depth
   b. Frequency
   c. TGC
   d. Cine loop

ANS: A
The depth control places the area of interest in the center of the screen. The organ should appear large enough to fill a good portion of the image, yet the surrounding anatomy should be easily visualized. If the posterior portion of the organ is off the screen, the depth has been improperly set.

OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

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8. The sonologist has requested a side-by-side comparison view. Which control should be used?
   a. Focal zone position
   b. Focal zone number
   c. Left/right key
   d. Imaging preset

   ANS: C
   The dual image (i.e., left/right) key is used to produce a side-by-side view. In this view, measurements from two different images can be compared.

   OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

9. The trace function
   a. places cursors for distance measurement.
   b. erases cursors, outlines, and measurement results.
   c. places cursors for distance and transverse measurements.
   d. outlines circumference measurements.

   ANS: D
   The trace function is a measurement key that outlines a circumference for measurements.

   OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

10. The body pattern control
    a. displays the body pattern to indicate patient positioning.
    b. adjusts automatically when the patient is turned to another position.
    c. allows pulsed wave and M-mode images to overlie the body pattern.
    d. adjusts the detail for images.

    ANS: A
    The body pattern control displays the body pattern to indicate patient positioning. The pattern appears on the monitor screen.

    OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

11. Doppler can be added to the image by which control?
    a. M mode
    b. Brightness and contrast
    c. Power Doppler
    d. Trackball

    ANS: C
    The Doppler function can be activated by the color Doppler or power Doppler controls.

    OBJ: Demonstrate the steps to operate the ultrasound system. TOP: Knobology

12. Which is the proper order for operating the ultrasound system?
    a. Adjust the TGC, focal zones, and image size; enter the patient's name and ID

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number; and select the transducer.
b. Adjust the focal zones, image size, and TGC; select the transducer; and enter the patient's name and ID number.
c. Enter the patient's name and ID number; adjust the focal zones, image size, and TGC; and select the transducer.
d. Enter the patient's name and ID number; select the transducer; and adjust the TGC, focal zones, and image size.

ANS: D
The recommended order for operating the ultrasound system is enter the patient's name and ID number; select the appropriate transducer; place the transducer on the patient with a generous amount of coupling gel; and then adjust the TGC, focal zones, and image size.

OBJ: Demonstrate the steps to operate the ultrasound system. TOP: Knobology

13. The Worklist electronic program allows sonographers to
a. connect the Hospital Information System, Radiology Information System, and Picture Archiving and Communication System in one database.
b. order the patient examinations for the day.
c. query for patient demographic information from the ultrasound system.
d. engage the preset function of the system.

ANS: C
Many hospitals and imaging centers now use the Worklist program, which transfers patient information electronically to the ultrasound system. Sonographers "query" Worklist from the ultrasound system through a dedicated computer network. Detailed, pertinent patient information (e.g., the patient's full name and date of birth, the referring physician's name, the patient's medical record number, and the type of study to be done) then is populated into a patient information page on the ultrasound system.

OBJ: Discuss the functions of the Worklist program.
TOP: Image Processing and Storage

14. There is a mass in the anterior portion of the left lobe of the liver, but the borders are not well resolved. Which control should the sonographer adjust?
a. Depth
b. Overall gain
c. TGC
d. Frequency

ANS: D
Better tissue resolution is obtained with higher frequencies.

OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

15. Which of the following controls allows you to position the measurement cursors?
a. Trackball
b. Cine Loop
c. Freeze key
d. Preset

ANS: A

The trackball guides the cursor on the screen.

OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

TRUE/FALSE

1. The advantages of the Radiology Information System include appointment scheduling and the use of work lists.

   ANS: T
   The Radiology Information System (RIS) can be integrated with other hospital information systems, allowing patient scheduling, the use of work lists, and digital dictation.

   OBJ: Describe the differences between PACS, HIS, and RIS.
   TOP: Image Processing and Storage

2. The advantages of the Picture Archiving and Communication System include a capability for remote radiologic consultation.

   ANS: T
   The Picture Archiving and Communication System at external hospitals allows for remote radiologic consultation through electronic imaging.

   OBJ: Describe the differences between PACS, HIS, and RIS.
   TOP: Image Processing and Storage

3. An advantage of the Hospital Information System is electronic storage of patients' demographics and chart information.

   ANS: T
   The Hospital Information System electronically stores patients' demographics and chart information.

   OBJ: Describe the differences between PACS, HIS, and RIS.
   TOP: Image Processing and Storage

4. Teleradiology involves radiologic consultations done within the imaging center where an examination was performed.

   ANS: F
   Teleradiology involves remote radiologic consultations done through the use of PACS at the sending and receiving institutions.

   OBJ: Describe the differences between PACS, HIS, and RIS.
   TOP: Image Processing and Storage

5. Sonographers must learn to use a wide range of technologic tools to ensure optimum imaging and to facilitate sonologist reporting.

   ANS: T

Sonographers have a wide range of technologic support at their disposal, such as ever-advancing ultrasound systems and electronically connected patient data and physician workstations. Therefore, it is important that sonographers develop superb technologic skills to ensure proper handling of the ultrasound system and additional electronic data systems at their disposal. Well-educated sonographers advance patient care and the ultrasound profession through the proper use of technology and their assistance to sonologists.

OBJ: Compare and contrast the functions of the keyboard controls: primary imaging controls, calculation controls, and additional controls. TOP: Knobology

6. PACS is a computer technology system that automatically selects the correct frequency, depth, and focal zone controls.

ANS: F
Most hospitals and imaging centers currently run filmless by using a computer technology system called **PACS**, an acronym for Picture Archiving and Communication System. This computer technology allows for improved image resolution as images are stored in a digital format and are software controlled. Ultrasound images are acquired digitally and are viewed and stored on a computer and/or network server. This system can be dedicated to the ultrasound department or used on a larger scale throughout the entire radiology division and hospital. PACS can communicate with outside hospitals and imaging centers located anywhere in the world that are also equipped with PACS capabilities.

OBJ: Describe the differences between PACS, HIS, and RIS.
TOP: Image Processing and Storage

7. PACS is a computer technology system that unites the HIS and RIS and stores digital images.

ANS: T
Most hospitals and imaging centers currently run filmless by using a computer technology system called **PACS**, an acronym for Picture Archiving and Communication System. This computer technology allows for improved image resolution as images are stored in a digital format and are software controlled. Ultrasound images are acquired digitally and are viewed and stored on a computer and/or network server. This system can be dedicated to the ultrasound department or used on a larger scale throughout the entire radiology division and hospital. PACS can communicate with outside hospitals and imaging centers located anywhere in the world that are also equipped with PACS capabilities.

OBJ: Describe the differences between PACS, HIS, and RIS.
TOP: Image Processing and Storage