



1. Which of the following is true pertaining to the tension (Langer) lines of the skin?
  - A) Surgical incisions should be made parallel to these lines to minimize scarring.
  - B) Surgical incisions should avoid cutting through these lines because they contain neurovascular bundles.
  - C) Surgical incisions should avoid cutting through these lines because they indicate the position of the underlying skin ligaments (retinacula cutis).
  - D) They become stretch marks (striae gravidarum) in obese individuals.
  - E) They separate fascial compartments.
  
2. Upon examining a radiograph of a skull, you notice an extra bone within the sagittal suture. Your immediate reaction is to:
  - A) dismiss the finding because there are often small sutural (wormian) bones within skull sutures that have no clinical significance.
  - B) request a head CT because these bones often develop after head injuries and can be associated with seizures.
  - C) assume that your patient had a vitamin D deficiency during childhood.
  - D) assume that your patient had a fontanelle that remained open beyond the normal period.
  - E) assume that your patient has a minor case of hydrocephalus.
  
3. Which of the following is incorrect pertaining to joints?
  - A) They receive blood from vessels surrounding the joint.
  - B) Most articular nerves are branches of the nerves to the muscles that cross the joint.
  - C) Loss of nerve supply results in avascular necrosis of the joint.
  - D) Some joints do not permit any movement.
  - E) Joint nerves transmit proprioceptive information.
  
4. A motor unit:
  - A) contains fewer muscle fibers in muscles that perform precise movements compared to those that perform gross movements.
  - B) refers to all the nerves that innervate a muscle.
  - C) refers to all the muscles that perform a single movement at a joint (e.g., synergistic muscles at the elbow).
  - D) refers to all the fibers entering a dorsal root (spinal) ganglion at a particular spinal level.
  - E) refers to all the nerve fibers innervating a particular muscle within a peripheral nerve.
  
5. A coronal knife cut through the head could potentially:
  - A) separate the lobule of the outer ear (auricle) from the rest of the auricle.
  - B) separate the tip of the nose from the rest of the nose.
  - C) separate the entire outer ear (auricle) from the head.

- D) separate the brain from the spinal cord.
  - E) separate one nostril from the other.
6. Circumduction is a combination of which of the following movements?
- A) flexion and extension
  - B) flexion and rotation
  - C) flexion, extension, adduction, abduction
  - D) abduction, adduction, medial rotation, lateral rotation
  - E) flexion, extension, medial rotation, lateral rotation
7. Which of the following is incorrect pertaining to a fracture of a bone?
- A) The fracture should be “reduced” to heal properly.
  - B) A collar of bone (callus) forms to hold the bones together while healing.
  - C) Greenstick fractures are most common in the elderly.
  - D) Osteoporotic bones break more easily than normal bones.
  - E) Tearing of the periosteum accounts for the acute pain associated with fracture.
8. Fusion of the diaphysis with the epiphysis:
- A) occurs at different ages for different long bones.
  - B) is evident radiologically throughout life.
  - C) is a permanent weak spot in bones.
  - D) is technically a symphysis.
  - E) only occurs in bones of the skull.
9. Osteoarthritis:
- A) develops from osteoporosis.
  - B) is associated with a loss of articular cartilage.
  - C) primarily affects non-weight bearing joints.
  - D) is associated with a reduction in vascular supply to a joint.
  - E) results in joints that are hypermobile.
10. Which of the following associations is incorrect?
- A) saddle joint—carpometacarpal joint of the thumb
  - B) condyloid joint—permit circumduction
  - C) ball and socket joint—hip joint
  - D) plane joint—acromioclavicular joint
  - E) pivot joint—biaxial joint
11. Which of the following associations is incorrect?
- A) repetitive strenuous exercise—hypertrophy of skeletal muscle
  - B) smooth muscle in uterus during pregnancy—hyperplasia of muscle cells
  - C) testing of muscle activity—electromyography
  - D) cardiac muscle—regenerates after a heart attack
  - E) muscle testing—diagnosis of nerve injury

12. A concentric muscle contraction:
- A) occurs when a muscle exerts a force and lengthens.
  - B) is an isometric contraction.
  - C) occurs when a muscle exerts a force and shortens.
  - D) only occurs in limb muscles.
  - E) occurs only in smooth muscle.

13. Arteriosclerosis:
- A) is associated with increased elasticity of arterial walls.
  - B) is associated with ischemia.
  - C) occurs in venules.
  - D) is most significant clinically in collateral arteries.
  - E) only occurs in vessels supplying the heart.

14. The leg depicted below is characterized by:



- A) insufficient arterial supply.
  - B) loss of muscle tone.
  - C) varicose veins.
  - D) muscle atrophy.
  - E) hypertrophy of epidermal cells.
15. The system by which nutrient-rich blood passes from the capillary beds of the alimentary tract to the capillary beds (sinusoids) of the liver is an example of:
- A) an arteriovenular anastomosis.
  - B) a lymphatic network.
  - C) a double-flow system.
  - D) a double-absorption system.
  - E) a portal venous system.
16. Which of the following is incorrect pertaining to the lymphatic system?
- A) It provides a means by which extracellular fluid can be drained back into the venous circulation.
  - B) All lymph from the body enters the venous circulation via the thoracic duct.

- C) It provides a pathway for spread of carcinoma.
  - D) Blockage often results in edema of the affected region.
  - E) In lymphangitis, red streaks can appear in the skin.
17. The central nervous system:
- A) consists of the sympathetic and parasympathetic systems.
  - B) typically recovers (slowly) from injury via renewed growth and reconnection of the damaged neurons.
  - C) consists of the brain and the 12 cranial nerves.
  - D) consists of the brain, spinal cord, and the 12 cranial nerves.
  - E) is separated from cerebrospinal fluid by the pia mater.
18. A dermatome is:
- A) all of the muscles innervated by a peripheral nerve.
  - B) all of the skin innervated by a peripheral nerve.
  - C) all of the muscles innervated by a single spinal nerve.
  - D) all of the skin innervated by a single spinal nerve.
  - E) all of the skin overlying a group of synergistic muscles.
19. Transecting an anterior (ventral) root of a spinal nerve (rhizotomy) might be recommended to:
- A) relieve muscle weakness.
  - B) reduce severe limb pain.
  - C) increase heart rate.
  - D) reduce lymph flow.
  - E) reduce excessive muscle tone (spasticity).
20. Which of the following is incorrect pertaining to the sympathetic motor system?
- A) It consists of preganglionic and postganglionic neurons.
  - B) Postganglionic neurons typically liberate norepinephrine.
  - C) Preganglionic fibers pass through both the “white” and “gray” rami.
  - D) It contains fibers that reach viscera using splanchnic nerves.
  - E) It facilitates sweating.
21. The parasympathetic system:
- A) is a lumbosacral outflow system.
  - B) has a greater distribution than the sympathetic system.
  - C) causes reduced blood flow to the limbs in cold conditions.
  - D) has relatively short postganglionic neurons compared to the sympathetic system.
  - E) is associated with fibers that convey pain from the limbs.
22. Which of the following is incorrect pertaining to plain radiographs?
- A) In a PA projection the x-rays traverse the patient from posterior to anterior.

- B) To minimize distortion the region of the body being examined should be as close as possible to the x-ray film or detector.
- C) Compact bone appears white on a radiograph because bone is relatively radiolucent.
- D) Enhancement of the visibility of certain structures on radiographs is facilitated by having the patient ingest a barium-containing compound.
- E) Standard chest radiographs should be viewed as if you were facing the patient.

23. Which of the following is incorrect pertaining to radiology?

- A) CT scans should be viewed as if you were standing at the feet end of a bed of a supine patient.
- B) Ultrasonography of the pelvic viscera is facilitated by an empty bladder.
- C) MRI is based on magnetic signals transmitted by protons within body structures.
- D) Nuclear magnetic imaging requires the intravenous administration of radioactive material.
- E) PET scans can reveal the activation of specific regions of the brain.

24. The image below represents:



- A) a plain radiograph.
- B) a CT scan.
- C) a nuclear medicine scan.
- D) an MRI scan.
- E) a myelogram.

## Answer Key

1. A
2. A
3. C
4. A
5. B
6. C
7. C
8. A
9. B
10. E
11. D
12. C
13. B
14. B
15. E
16. B
17. E
18. D
19. E
20. C
21. D
22. C
23. B
24. C

1. Which of the following is incorrect pertaining to the ribs?
  - A) The first 7 are referred to as vertebrosteral ribs.
  - B) Ribs 11 and 12 are typically “floating” (vertebral, free) ribs.
  - C) The tubercle of a typical rib attaches to the inferior articular facet of the corresponding vertebrae.
  - D) The head of a typical rib articulates with the bodies of two vertebrae.
  - E) The costal groove is associated with the intercostal vessels and nerve.
  
2. Rib fractures:
  - A) are more likely to occur in children than adults.
  - B) are most likely to occur at the junction of the rib and its corresponding vertebrae.
  - C) most often occur in the 1st rib.
  - D) in the lower ribs may be associated with tearing of the diaphragm.
  - E) are not typically painful.
  
3. The sternal angle:
  - A) indicates the location of the joint between the costal cartilage of the 2nd rib and the sternum.
  - B) occurs where the 1st rib attaches to the sternum.
  - C) is the least likely part of the sternum to fracture in the elderly.