GROSS ANATOMY EXAMINATION
March 13, 2000

For the following questions, indicate the letter that corresponds to the SINGLE MOST APPROPRIATE ANSWER.

1. A patient in the emergency room has a penetrating knife wound in the apex of the femoral triangle. This type of injury could sever all of the following EXCEPT the
   A. saphenous nerve
   B. femoral artery.
   C. femoral nerve.
   D. femoral vein.

2. A 48-year-old man visited your office with symptoms that had developed over a year and that currently included severe weakness in flexion of the forearm at the elbow joint and sensory loss to the skin of the lateral area of the forearm. A tumor involving what structure could result in these symptoms?
   A. Lower trunk of the brachial plexus
   B. Medial cord of the brachial plexus
   C. Median nerve
   D. Radial nerve
   E. Upper trunk of the brachial plexus

3. During surgery to section the flexor retinaculum for carpal tunnel syndrome, the surgeon must be aware of structures superficial/anterior to the carpal tunnel, which include all of the following EXCEPT the
   A. ulnar artery.
   B. ulnar nerve.
   C. flexor pollicis longus tendon.
   D. palmar cutaneous branch of the median nerve.
   E. tendon of the palmaris longus muscle.

4. In the upper extremity, a pulse may be palpated in all of the following locations EXCEPT the
   A. medial side of the tendon of the biceps brachii muscle.
   B. radial side of the tendon of the flexor carpi radialis muscle.
   C. space between the tendons of the extensor pollicis longus and brevis muscles.
   D. radial side of the tendon of the flexor carpi ulnaris muscle.
   E. space between the tendons of the palmaris longus and the flexor carpi radialis muscles.

5. A hunter recently returned from a two-week trip into the sierra Mountains. He complained of redness, inflammation and soreness in the middle of his wrist (carpal
tunnel). He reported that a rusty nail had pierced one of his digits at the beginning of the trip. The digit that was most likely pierced was the
A. 2nd.
B. 3rd.
C. 4th.
D. 5th.

6. A waitress for the past 15 years complains of foot pain after a day's work. You suspect that she has "fallen arches" and recall that all of the following bones contribute to the medical longitudinal arch EXCEPT the
A. cueiforms.
B. cuboid.
C. talus.
D. medial three metatarsals.
E. navicular.

7. A 16-year-old female had a fracture of the surgical neck of the humerus as the result of a gymnastic fall. Which of the following structures was most likely injured as the result of this fracture?
A. Axillary nerve
B. Radial nerve
C. Lateral cord of the brachial plexus
D. Posterior cord of the brachial plexus
E. Musculocutaneous nerve

8. A 16-year-old soccer striker was tripped and fell to the turf on his right shoulder. On examination, the sports medicine physician determined that there was a shoulder injury in which the lateral end of the clavicle slid onto the superior aspect of the acromion. Which of the following ligaments was most likely damaged?
A. Sternoclavicular
B. Coracoclavicular
C. Costoclavicular
D. Coracoacromial
E. Glenohumeral

9. During surgery to repair a bloody wound in the area of the "anatomical snuff box," the emergency room resident was careful to avoid surgical injury to the structures in this region, including all of the following EXCEPT the
A. cutaneous branches of the superficial radial nerve.
B. tendon of the extensor pollicis brevis muscle.
C. tendon of the abductor pollicis brevis muscle.
D. radial artery.
E. tendon of the extensor pollicis longus muscle.

10. A 40-year-old woman has varicose veins in her left leg which cause her a considerable amount of discomfort. Stripping parts of the great saphenous vein was
recommended as a treatment. This vein
A. ascends posterior to the medial malleolus.
B. travels posterior to the lateral femoral condyle.
C. does not have any valves.
D. passes through the saphenous opening.
E. drains primarily into the popliteal vein.

11. A phlebotomist was examining the patient's arms to determine the best site to draw
blood from the cephalic vein. She knew that the cephalic vein
A. originates from the medial side of the dorsal venous arch.
B. empties directly into the subclavian vein.
C. lies in the deltopectoral groove for part of its course.
D. ascends on the medial side of the arm.
E. pierces the brachial fascia in the middle of the arm.

12. As you're running down the street trying to catch a bus, you suddenly twist your right
ankle (caused by sudden and violent inversion of the foot). You are aware that the
muscles that counteract this action are supplied by the peroneal (fibular) artery. This
artery
A. begins at the superior border of the popliteus muscle.
B. descends along the lateral side of the fibula.
C. supplies the lateral compartment musculature.
D. is a branch of the anterior tibial artery.
E. gives rise to the medial malleolar artery.

13. During surgical removal of a tumor of the upper forearm, the supinator muscle was
cut, injuring a nerve that passes deep to it. What symptoms would most likely result from
this nerve injury?
A. Loss or severe weakness of extension of the forearm at the elbow joint
B. Loss or severe weakness of extension of the thumb at the metacarpophalangeal joint
C. Loss or severe weakness of abduction of the index finger.
D. Loss of or severely diminished sensation of the skin of the lateral side of the
forearm
E. Loss of or severely diminished sensation of the skin of the dorsum of the thumb

14. While playing tackle with his 16-year-old son, the father received a blow on the
lateral side of his knee. Which of the following is most likely torn?
A. Tibial collateral ligament
B. Fibular collateral ligament
C. Oblique popliteal ligament
D. Lateral meniscus
E. Posterior cruciate ligament

15. All of the following muscles are primarily used in rising from a sitting position
EXCEPT the
A. sartorius.
B. rectus femoris.
C. vastus medialis.
D. semitendinosus.
E. gluteus maximus.

16. A 26-year-old male was stabbed in the upper part of the arm during an altercation in a barroom. On examination in the emergency room, he was found to have a substantial wound and hemorrhage in the upper part of his coracobrachialis muscle. What nerve was most likely injured?
   A. Radial
   B. Ulnar
   C. Median
   D. Lateral antebrachial cutaneous
   E. Musculocutaneous

17. After six weeks of cold winter weather, the weather finally changed and the temperature reached 75°F. You decided to go for a walk in the park. As you were walking barefoot on the grass, you inadvertently stepped on a sharp nail and started bleeding from a cut on the plantar surface of your foot near the calcaneus. You probably cut a branch of which of the following arteries?
   A. Arcuate
   B. Posterior tibial
   C. Fibular (peroneal)
   D. Anterior tibial
   E. Dorsalis pedis

18. Dr. McDonough examined the hand of a prize-fighter who had difficulty flexing the metacarpophalangeal joints of his second to fifth digits. He knew that all of the following muscles contribute to this movement EXCEPT the
   A. dorsal interossei.
   B. flexor digitorum superficialis.
   C. flexor carpi radialis.
   D. flexor carpi radialis.
   E. palmar interossei.

19. Jose Canseco complained of severe pain in the hypothenar eminence of his left hand following an arduous batting practice session. X-rays revealed that he had fractured the most medial bone in the distal row of carpal bones. What was the bone?
   A. Lunate
   B. Trapezeum
   C. Hamate
   D. Pisiform
   E. Triquetrum
20. As a required exercise, you have to palpate the pulse of different arteries of the lower limb. The pulse of the popliteal artery is a little difficult to palpate, but you know that this artery

A. continues distally as the peroneal (fibular) artery.
B. is superficial to the popliteal vein.
C. gives off superior and inferior genicular branches.
D. travels with the common peroneal (fibular) nerve.
E. supplies most of the thigh muscles.

21. Footdrop can be caused by damage to the
A. tibial nerve.
B. medial plantar.
C. lateral plantar nerve.
D. common peroneal nerve.
E. sural nerve.

22. Dr. Stern examined the fingers of Red's ace, Denny Neagle. Dr. Stern was aware that Neagle had previously injured the extensor expansion (hood) of some of his fingers and knew that all of the following muscles contributed to the expansion EXCEPT
A. the extensor indicis muscle.
B. the extensor digitorum muscle.
C. the abductor digiti minimi.
D. an interosseous muscle.
E. a lumbrical muscle.

23. A 17-year-old long jumper hyperextended her wrist during her second jump in a track meet. The sports medicine doctor was concerned that she had damaged her wrist joint and recalled that all of the following statements about this joint are correct EXCEPT that it
A. includes a disc separating the ulna from the carpal bones.
B. permits abduction and adduction of the hand.
C. is strengthened by collateral ligaments.
D. is an articulation between individual carpal bones.
E. has an articulation with the radius.

24. Tingling, painful, or itching sensations on the lateral surface of the thigh may occur in an overweight individual as a result of a bulging abdomen compressing a nerve that passes under the inguinal ligament. The nerve most likely compressed is the
A. intermediate (anterior) cutaneous branch of the femoral.
B. femoral branch of the genitofemoral.
C. lateral femoral cutaneous.
D. genital branch of the genitofemoral.
E. ilioinguinal.

25. A patient with subcutaneous hemorrhages in both cubital areas, secondary to unsuccessful venipunctures, needed to have an intravenous line (cannula) inserted for
infusion of medications. The technician attempted to insert a needle into the cephalic vein in the middle of the forearm. In doing so, he was careful to test for entrance into a vessel (by withdrawal of blood) for fear of inserting the needle into the subcutaneous tissue space around the vessel that also contains cutaneous nerves. Which cutaneous nerve is located in this area?

A. Palmar branch of the median nerve
B. Medial cutaneous nerve of the arm
C. Lateral cutaneous nerve of the arm
D. Medial cutaneous nerve of the forearm
E. Lateral cutaneous nerve of the forearm

26. A 45-year-old female secretary visited her doctor with symptoms of pain in her right hand that had been present for "the last several months." In addition, she more recently had clumsiness in that hand. Her physician diagnosed her condition as carpal tunnel syndrome after demonstrating he territory of abnormal sensation as well as weakness of the muscles supplied by

A. digital branches of the ulnar nerve.
B. digital branches of the radial nerve.
C. the deep ulnar nerve.
D. the recurrent branch of the median nerve.
E. the palmar branch of the median nerve.

27. A 45-year-old man comes into the emergency department with a stab wound that severed the profunda femoris artery. You know that this artery

A. continues distally as the popliteal artery.
B. passes through the adductor hiatus.
C. gives off a medial humeral circumflex artery.
D. has branches that participate.
E. supplies deep muscles of the gluteal region.

28. As the result of a motor vehicle accident, a 65-year-old male had a laceration that severed the median nerve in the upper half of the cubital fossa. Functions that were probably lost or weakened included all of the following EXCEPT

A. pronation of the forearm.
B. opposition of the thumb.
C. adduction of the hand.
D. sensation over the palmar surface of the lateral three and one-half digits.
E. flexion at the wrist.

29. A child falls on a spike, injuring midline structures in the popliteal fossa. Which of the following nerves is most likely injured?

A. Common peroneal
B. Tibial
C. Obturator
D. Sciatic
E. Femoral
30. The goalie of a Cincinnati high school soccer team suffered a hamstring strain (pulled hamstrings) during a tough championship game. The hamstrings
   A. are extensors of the leg at the knee joint.
   B. are innervated by the femoral nerve.
   C. are supplied by branches of the profunda femoris artery.
   D. form the inferior border of the popliteal fossa.
   E. mainly arise from the ischial spine.

31. A 30-year-old man went to see his physician because he had problems when walking. During examination, his doctor noticed that while standing, and when asked to raise his left leg, the left side of the patient's pelvis sagged (dropped). This problem was probably due to injury of the
   A. right pudendal nerve.
   B. left gluteus medius muscle.
   C. left inferior gluteal nerve.
   D. right gluteus maximus muscle.
   E. right superior gluteal nerve.

32. An x-ray was taken in a 56-year-old female, revealing a cervical rib (extra rib in the lower cervical area) that compressed the C8 nerve root. This woman had symptoms that most likely included
   A. weakness in flexion of the arm at the shoulder.
   B. "winged scapula."
   C. decreased or loss of sensation to the skin of the middle finger.
   D. decreased or loss of sensation to the skin of the little finger.
   E. decreased or loss of sensation to the skin of the palmar side of the tip of the thumb.

33. A 60-year-old woman is diagnosed with varicose veins in both of her legs. As a first-year medical student, you remember that often, superficial veins accompany cutaneous nerves, and deep vessels accompany deep nerves. Which of the following matches is correct?
   A. Deep peroneal (fibular) nerve - anterior tibial artery
   B. Superficial peroneal (fibular nerve - small saphenous vein
   C. Tibial nerve - dorsalis pedis artery
   D. Sural nerve - great saphenous vein
   E. Saphenous nerve - peroneal (fibular) artery

34. To prepare for your first day of your orthopedic rotation, you decide to review the anatomy of the pelvic girdle. You recall that the
   A. ischial spine is the site of origin of the hamstring muscles.
   B. upper border of the iliac crest is in the same horizontal plane as the l1 spinous process.
   C. acetabulum is formed by the union of the ilium, ischium and pubis.
   D. rectus femoris muscle arises from the anterior superior iliac spine.
   E. iliac fossa is the site of origin of the abductors of the thigh at the hip joint.
35. In assessing the functions of the small muscles of the hand, the physical therapist asks the patient to flex the proximal phalanges at the metacarpophalangeal joint and extend the middle and distal phalanges at the interphalangeal joints against resistance. Which muscles would she be testing?
A. Flexor digiti minimi
B. Flexor pollicis brevis
C. Flexor digitorum superficialis
D. Lumbricals
E. Extensor digitorum

36. During the repair of a femoral hernia that has extended into the superficial fascia of the anterior thigh, the surgeon asked a third-year medical student questions regarding femoral hernias and the femoral sheath. The student remembered that all of the following statements about this sheath are correct EXCEPT that it
A. is formed by the transversalis and iliopsoas fasciae.
B. contains the femoral nerve.
C. contains the femoral canal.
D. contains the femoral artery and vein.
E. is continuous inferiorly with the adventitia of the femoral vessels.

37. A 47-year-old man sustained an injury to his left lower limb. You observe that his foot is dorsiflexed and partially everted. you suspect that there might be an injury to the
A. deep peroneal nerve.
B. superficial peroneal nerve.
C. common peroneal nerve.
D. tibial nerve.
E. femoral nerve.

38. While drawing blood from the median cubital vein, the underlying neurovascular structures are protected by the
A. brachioradialis muscle.
B. bicipital aponeurosis.
C. tendon of the biceps brachii muscle.
D. pronator teres muscle.
E. tendon of the brachialis muscle.

39. A radiologist wished to catheterize the femoral artery in order to perform an arteriogram to visualize the branches of the abdominal aorta. To avoid injury to other structures in the area, the radiologist attempted to locate the artery in the
A. intermediate compartment of the femoral sheath.
B. area deep to the femoral vein at the apex of the femoral triangle.
C. medial compartment of the femoral sheath.
D. area lateral to the femoral sheath.
E. lateral compartment of the femoral sheath.
40. A patient has loss of sensation of the skin between the big and second toes. He could also demonstrate weakness or loss of all the following actions EXCEPT
   A. dorsiflexion at the ankle.
   B. plantarflexion at the ankle.
   C. inversion of the foot.
   D. extension of the toes

41. The lateral plate mesoderm gives rise to all of the following limb components EXCEPT
   A. bones.
   B. ligaments.
   C. muscles.
   D. tendons.
   E. vasculature.

Answer Key 2000
1. c
2. e
3. c
4. e
5. d
6. b
7. a
8. b
9. c
10. d
11. c
12. c
13. b
14. a
15. a
16. e
17. b
18. d
19. c
20. c
21. d
22. c
23. d
24. c
25. e
26. d
27. d
28. c
29. b
30. c
31. e
32. d
33. a
34. c
35. d
36. b
37. d
38. b
39. e
40. b
41. c