EXAM NUMBER_____

STRUCTURAL BASIS OF MEDICAL PRACTICE
EXAMINATION 5

October 2, 2009

PART I. Answer in the space provided. (12 pts)

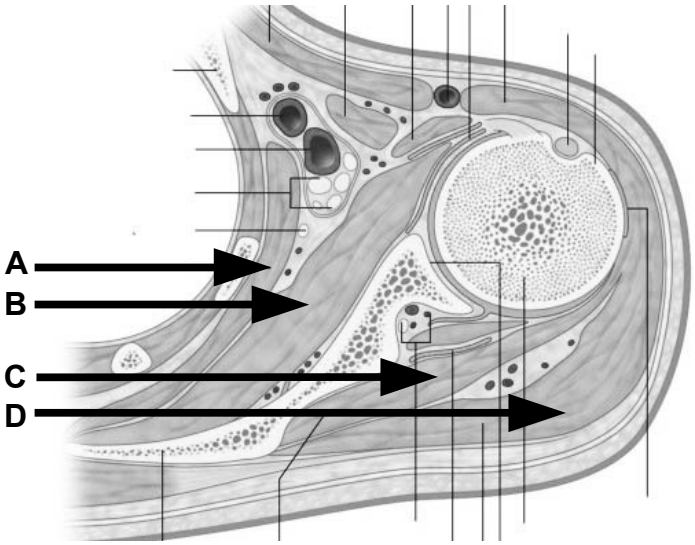
1. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



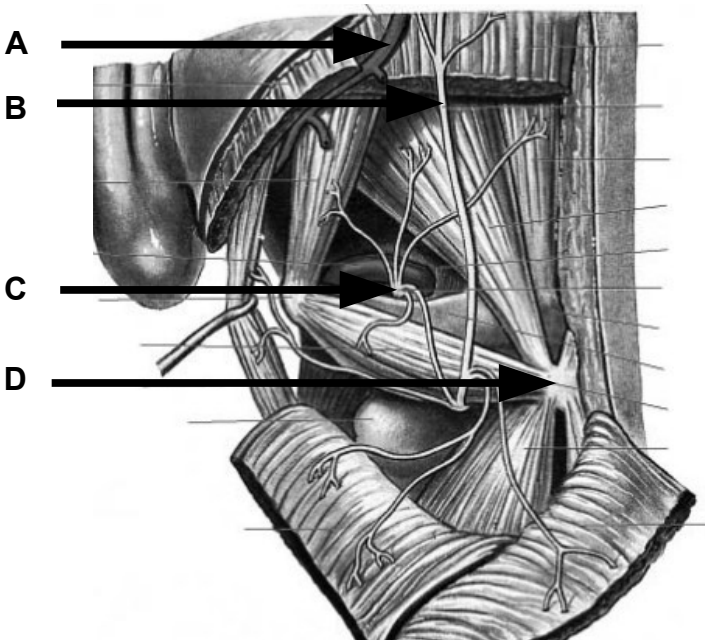
2. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



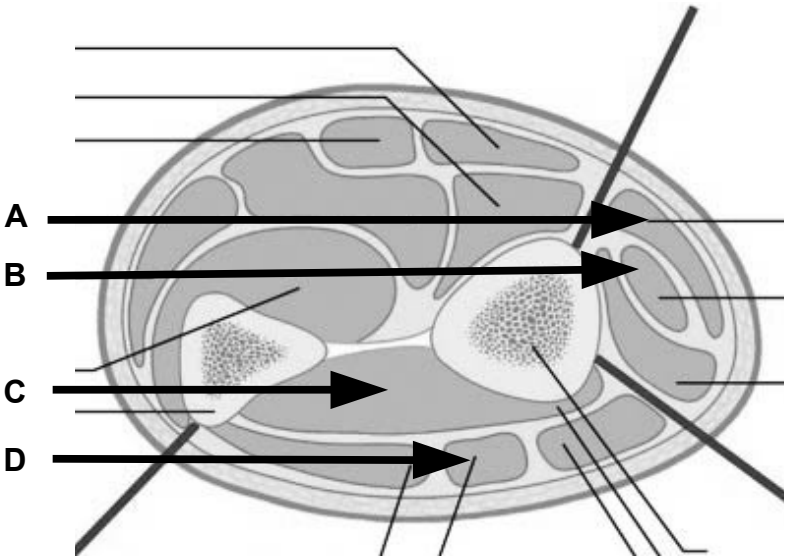
3. Identify the structure. (2 pts)

A._____

B. _____

C. _____

D. _____



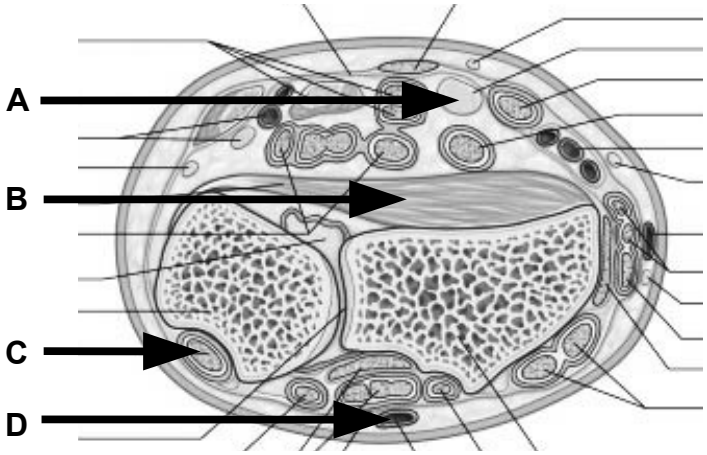
4. Identify the structure. (2 pts)

A. _____

B. _____

C. _____

D. _____



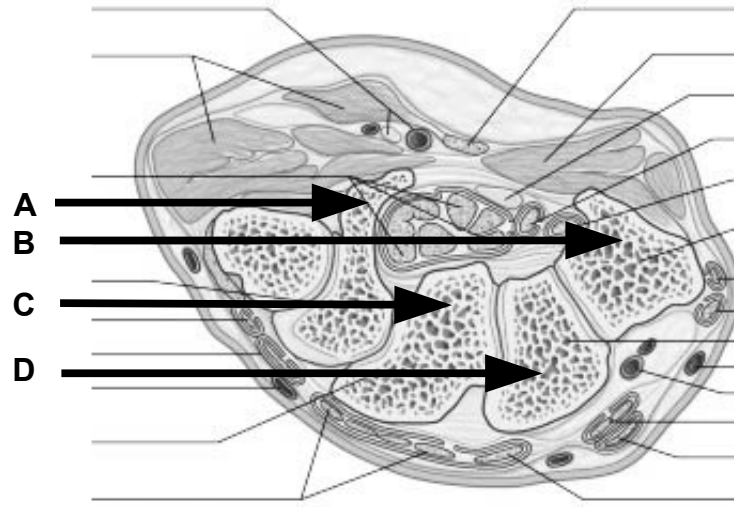
5. Identify the structure. (2 pts)

A. _____

B. _____

C. _____

D. _____



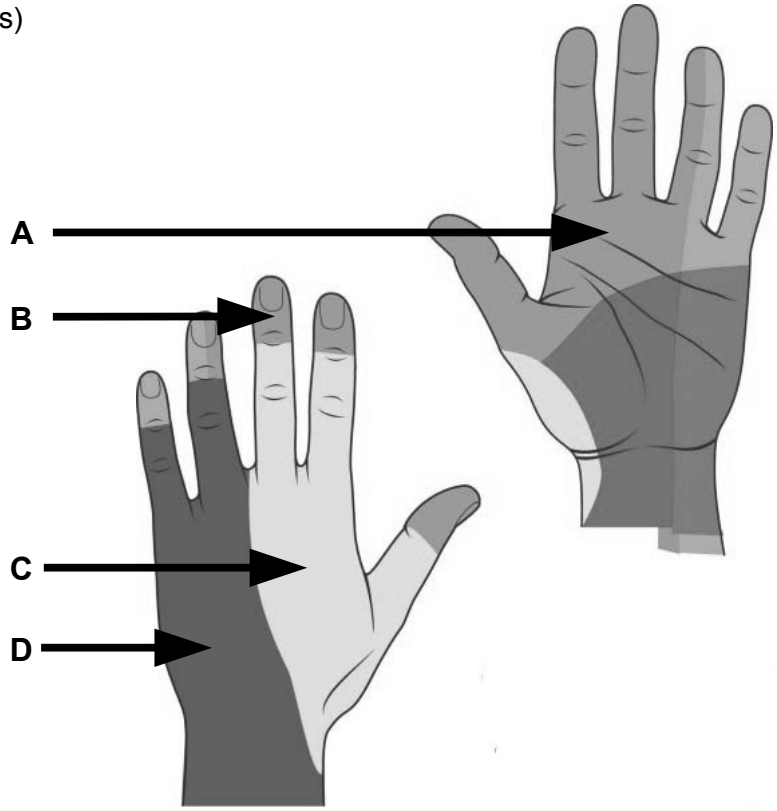
6. Identify the nerve distributions. (2 pts)

A. _____

B. _____

C. _____

D. _____



Part II. Circle the correct answer. All, none, or some may apply. (22 pts)

1. With regard to the back, suboccipital region, and scapular region:

    a. The posterior and anterior spinal arteries require augmentation from radicular arteries for there to be adequate blood supply to the spinal cord.

    b. The transversospinalis group of muscles are innervated by the dorsal rami of spinal nerves.

    c. The obliquus capitis inferior muscle rotates the head to the ipsilateral (same) side.

    d. There are 8 cervical nerves and 7 cervical vertebrae.

    e. The dorsal scapular nerve passes the lateral border of the levator scapulae muscle.

    f. The triangular interval provides a communication between the axilla and the infraspinous fossa.

    g. The upper lateral cutaneous nerve of the arm can be used to test the integrity of the dorsal scapular nerve.

    h. The levator scapulae muscle is innervated, in part, by the dorsal scapular nerve and arises from the spinous processes of the upper four cervical vertebrae.

2. With regard to the axilla and brachial plexus:

    a. The lateral wall of the axilla is largely made up of the serratus anterior muscle.

    b. A lesion of the dorsal scapular nerve causes uncompensated loss of retraction of the scapula.

    c. Ligation of the axillary artery distal to the thyrocervical trunk and proximal to the subscapular artery causes reverse (retrograde) blood flow in the circumflex scapular artery.

    d. A lesion of the long thoracic nerve causes severe weakness in protraction of the scapula.

    e. A lesion of the axillary nerve would weaken every possible movement at the glenohumeral joint with the exception of abduction from 0 - 15 degrees.

    f. A lesion of the radial nerve at the spiral groove would cause the wrist to be flexed and adducted.

    g. A lesion of the radial nerve in the axilla causes a deformity known as ape hand.

    h. A lesion of the radial nerve at the spiral groove causes wrist drop.

    i. A lesion of the radial nerve at the spiral groove causes loss of extension at the elbow.

    j. The ulnar nerve enters the wrist by passing through the heads of origin of the flexor carpi ulnaris muscle.

3. With regard to the arm:

    a. A lesion of the musculocutaneous nerve within the axilla causes uncompensated loss of flexion at the elbow.

    b. The middle collateral artery remains in the posterior compartment of the arm and passes posterior to the lateral epicondyle.

    c. Both the coracobrachialis muscle and the long head of the biceps flex the forearm and arise from the coracoid process.

    d. Structures passing through the quadrangular space circle the anatomical neck of the humerus.

4. With regard to the forearm:

    a. The extensor carpi radialis longus muscle is primarily an extensor of the wrist and the extensor carpi radialis brevis muscle is primarily an abductor of the wrist.

    b. A gap superior to the superior free edge of the interosseous membrane and inferior to the oblique cord provides passageway for the posterior interosseous nerve to pass from the anterior forearm to the posterior forearm.

    c. The pronator quadratus receives the most distal motor innervation of the posterior interosseous nerve.

    d. The radial two tendons of the flexor digitorum profundus are innervated by the radial nerve

    e. The brachioradialis extends the elbow and flexes the wrist.

    f. The flexor carpi ulnaris muscle originates from the lateral epicondyle of the humerus and passes posterior to the flexor retinaculum.

    g. The anterior interosseous artery passes anterior to the pronator quadratus muscle.

    h. Entrapment of the median nerve between the two heads of the pronator teres muscle causes weakened pronation of the forearm.

5. With regard to the hand:

    a. The interosseous and lumbrical muscles resist hyperextension at the metacarpophalangeal joint.

    b. The index finger has a dorsal interosseous on the radial side and a palmar interosseous on the ulnar side.

    c. The anterior interosseous artery contributes to the dorsal carpal arch.

    d. The ulnar artery is radial to the ulnar nerve at the proximal entrance to Guyon's canal.

    e. The pisiform bone is a sesamoid bone within the tendon of the flexor carpi radialis muscle.

    f. The muscles of the thenar eminence are innervated by the recurrent median nerve.

g. The third digit (middle finger), by definition, is not capable of adduction.

h. The lateral bands of the extensor apparatus (extensor hood) extend distal to the central band and insert on the posterior surface of the distal phalanx.

6. With regard to the joints:

a. The fiber direction of the interosseous membrane resists proximal movement of the radius.

b. The inferior glenohumeral ligament resists inferior dislocation of the shoulder joint.

c. The tendons of the interosseous muscles cross posterior to the deep transverse metacarpal ligament and anterior to the axis of the metacarpophalangeal joint.

d. A treatment for loss of extension at the wrist is to fuse the wrist in a flexed position.

e. The triangular fibrocartilage complex is part of the distal radioulnar joint.

f. The long extensor muscles of the wrist help to strengthen a strong grip.

Part III. Indicate your understanding of the following. Answer in the space provided. (30 pts)

1. Quadrangular space. (6 pts)

2. Interosseous membrane of forearm. (6 pts)

3. Flexor retinaculum of wrist. (6 pts)

4. Rotator cuff muscles. (6 pts)

5. Extensor apparatus (hood) of index finger. (6 pts)

Part IV. Answer in the space provided (including the back of the page or the additional pages for each question). (36 pts)

1. A 36 year-old female comes to your office with complaints of severe low back pain and episodes of urinary incontinence. She is 22 weeks gestation and had developed low back pain over the last few weeks. Concerned about exposing her fetus to analgesics she sought treatment from an alternative health provider. Since then the pain has been severe, constant, and to the point that she is having difficulty walking. On exam, she is in obvious distress. Her pelvic exam displayed poor rectal sphincter tone and "saddle anesthesia." **Review the anatomy of the vertebral column and spinal canal. Include bones, articulations, ligaments, spaces, contents, muscles, movements and limitations of movement, vasculature and lymphatic drainage, innervation, and relationships. Include mention of the fascial layers penetrated during lumbar puncture and a brief account of saddle anesthesia. (12 pts)**

2. A 28 year-old female tennis player complains of tenderness on the outer bony part of the elbow. She reports morning stiffness of the elbow with persistent aching and pain when the fingers and wrist are extended. **Review the anatomy of the elbow region and cubital fossa. Include bones, articular surfaces, cavities, capsules, ligaments, contents, boundaries, muscles, movements and limitations of movement, vasculature, innervation, relationships to surrounding structures, and lymphatic drainage. (12 pts).**

3. Dr. Jeffries presented a patient who, two years ago, sustained injuries to the brachial plexus. Although the patient has significantly improved, he has persistent symptoms of ulnar nerve injury. **Review the origins, relationships and distributions of the ulnar nerve. Discuss ulnar nerve injury and its effects on muscles, joints, and sensory distributions. (12 pts)**