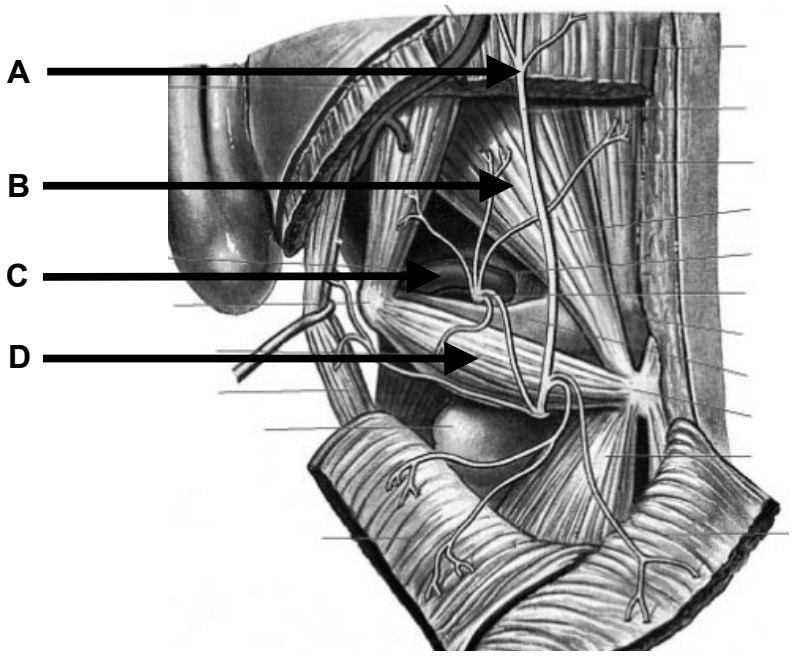
EXAM NUMBER_____

STRUCTURAL BASIS OF MEDICAL PRACTICE
EXAMINATION 5

September 28, 2012

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

1. Identify the structures. (2 pts)



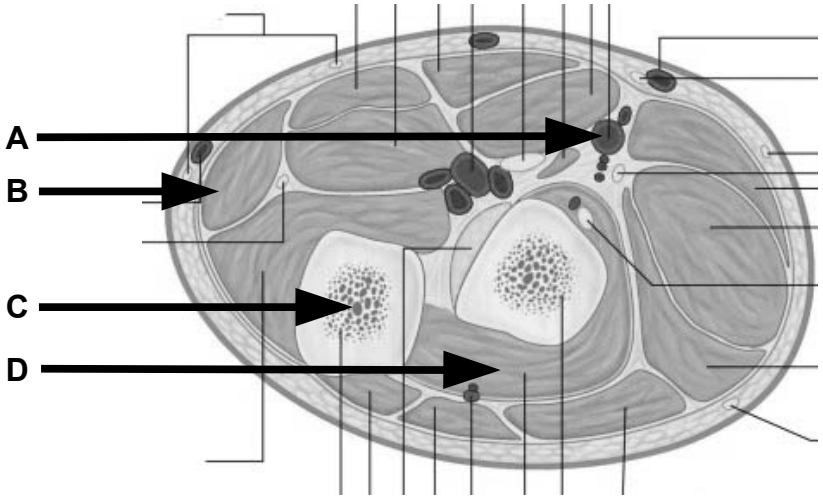
A. Greater occipital nerve

B. Rectus capitus post. major

C. Vertebral artery

D. Obliquus capitus inferior

2. Identify the structures. (2 pts)



A. Radial artery

B. Flexor carpi ulnaris

C. Ulna

D. Supinator

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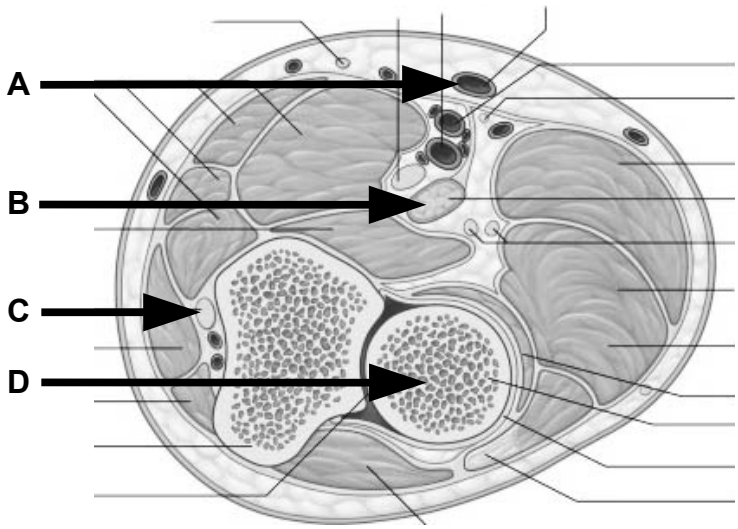
3. Identify the structures. (2 pts)

A. Median cubital vein

B. Tendon of biceps brachii

C. Ulnar nerve

D. Head of radius



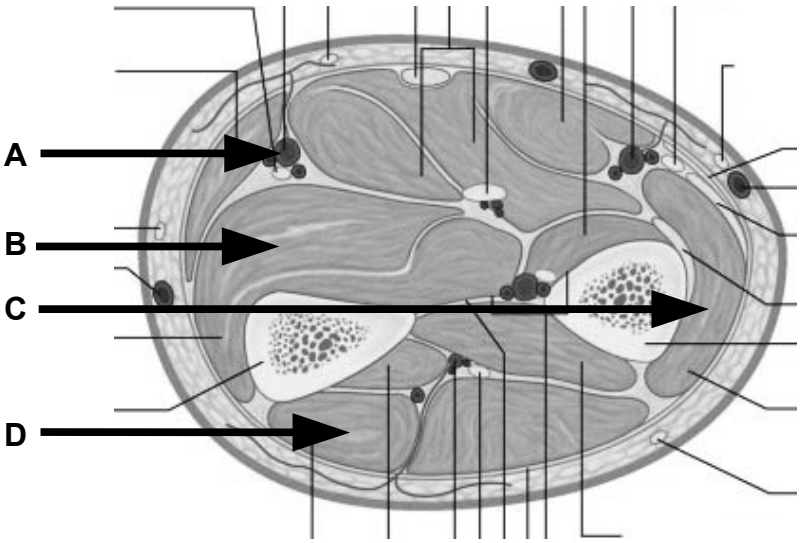
4. Identify the regions and structures. (2 pts)

A. Ulnar artery

B. Flexor digitorum profundus

C. Extensor carpi radialis brevis

D. Extensor carpi ulnaris



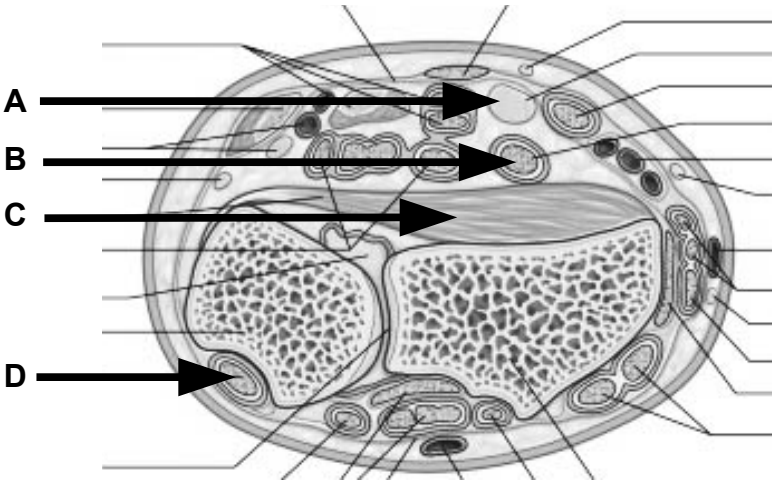
5. Identify the structures. (2 pts)

A. Median nerve

B. Flexor pollicis longus

C. Pronator quadratus

D. Extensor carpi ulnaris



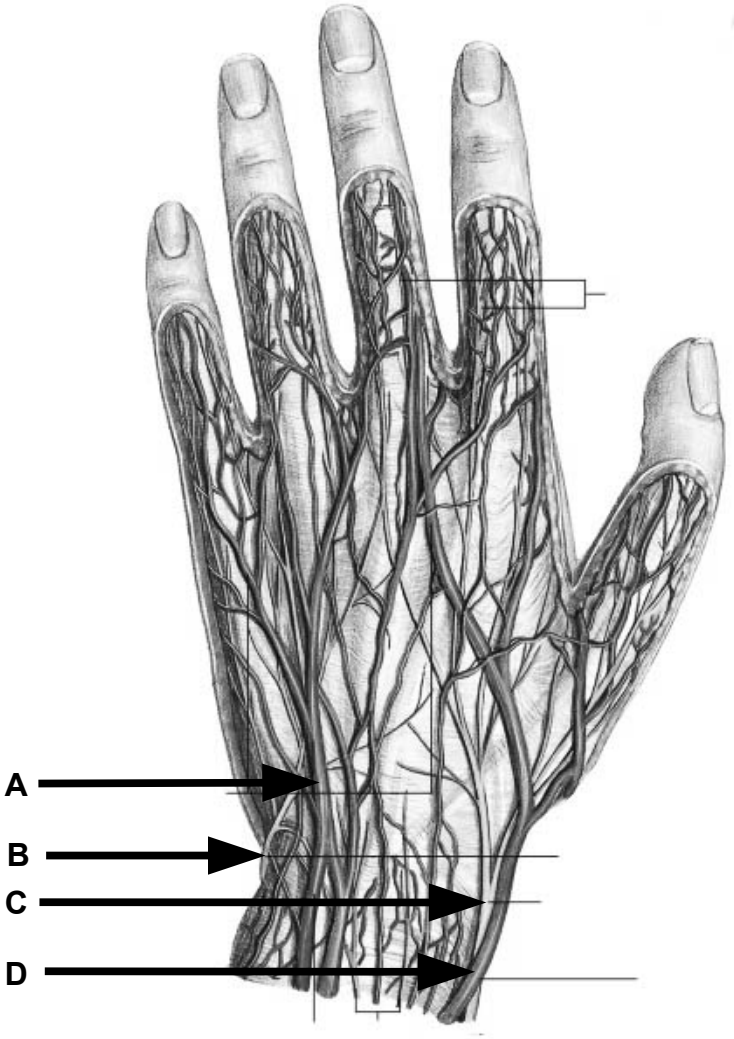
6. Identify the structures. (2 pts)

A. Basilic vein

B. Dorsal branch ulnar nerve

C. Superficial radial nerve

D. Cephalic vein



Part II. Circle the correct answer. All, none, or some may apply. (18 pts)

1. **With regard to the back, suboccipital region, and scapular region:**
   a) Iliocostalis attaches to the ribs along the costochondral joints.
   b) The transversospinal group of muscles are innervated by the dorsal rami of spinal nerves.
   c) Paralysis of the rhomboids and the trapezius causes uncompensated loss of retraction of the scapula.
   d) The obliquus capitis inferior rotates the head to the opposite side.
   e) A lesion of the suprascapular nerve would weaken medial rotation of the arm.
   f) The circumflex scapular artery passes superior to the superior transverse scapular ligament.
   g) Ligation of the axillary artery proximal to the subscapular artery causes reversed blood flow (retrograde) in the posterior and lateral intercostal arteries.
   h) The distribution of upper lateral cutaneous nerve of the arm can be used to test the dorsal scapular nerve
2. **With regard to the axilla and brachial plexus:**
   a) The lower subscapular nerve innervates two muscles that medially rotate the arm.
   b) A lesion of the middle subscapular nerve weakens lateral rotation of the arm.
   c) The axillary artery becomes the brachial artery at the inferior free edge of the teres minor.
3. **With regard to the arm and cubital fossa:**
   a) The radial tuberosity faces anterior when the forearm is supinated.
   b) A lesion of the musculocutaneous nerve in the axilla eliminates flexion at the elbow.
   c) Passing between the two heads of origin of the flexor carpi ulnaris is the ulnar nerve and the anterior ulnar recurrent artery.
   d) The coracobrachialis is biarticulate and is pierced by the lateral cord of the brachial plexus.
   e) The medial (middle) collateral artery, but not the radial collateral artery, is in the cubital fossa.
   f) The pectoralis minor insertion converts the intertubercular sulcus into an osseofibrous tunnel.

4. **With regard to the forearm and the dorsum of the hand:**

   a) The extensor carpi radialis brevis inserts medial to the extensor carpi radialis longus.

   b) A lesion of the radial nerve in the cubital fossa causes an uncompensated loss of supination of the forearm.

   c) The superficial radial nerve and the cephalic vein can be palpated/observed crossing the extensor pollicis longus tendon at the snuff box.

   d) The lateral side of the hand is located medially when the forearm is supinated.

   e) The oblique cord is continuous with the interosseous membrane.

   f) Flexor digitorum superficialis is dually innervated; the radial side by the median nerve and the ulnar side by the ulnar nerve.

5. **With regard to the hand:**

   a) The surface projection of the superficial palmar arch is proximal to the deep palmar arch.

   b) The deep transverse metacarpal ligament stabilizes the bases of the metacarpal bones.

   c) Palmaris brevis and palmaris longus insert onto the palmar aponeurosis.

   d) The two heads of the adductor pollicis are innervated by the same nerve.

   e) Typically, the ulnar artery dominates the superficial palmar arch and radial artery dominates the deep palmar arch.

   f) The deep transverse metacarpal ligament intervenes between the lumbricals and the interossei.

   g) Guyon's canal (ulnar tunnel) lies medial to the pisiform and lateral to the hook of the hamate.

6. **With regard to the joints of the upper limb:**

   a) Intervening between the distal ulna and the scaphoid is an articular disk that limits adduction at the wrist joint.

   b) The rotator cuff muscles are 4 in number, 3 inserting on the lesser tubercle and one inserting on the greater tubercle.

   c) The lunate articulates distally with the trapezium and proximally with the radius.

   d) The costoclavicular ligament stabilizes the sternoclavicular joint.

   e) Stability of glenohumeral joint is decremented by a shallow glenoid fossa and incremented by a muscular cuff.

   f) The fiber direction of the interosseous membrane "close packs" the radioulnar joint and resists proximal displacement of the radius.

Part III. Questions for Clinical Correlations. (4 pts)

1. A 24 year old male is involved in a bar fight and sustains a knife wound to the right posterior forearm, transecting the deep branch of the radial nerve. **When the patient is examined in the emergency department, which of the following would best describe the deficits that this patient would demonstrate given this injury?**

a) Loss of sensation over the first and second digits with inability to flex the thumb and MCP joints of these fingers

b) Loss of sensation over the basal thumb joint and inability to flex the MCP, PIP and DIP joints of the thumb and index finger

c) Inability to extend the wrist and abduct the thumb

d) Inability to extend the thumb and MCP joints of the fingers

e) Inability to extend the PIP joints of the 3rd, 4th and 5th fingers

2. A 53 year old woman is involved in a motor vehicle accident and sustains a crush injury to the scapular notch. The nerve passing through this area is damaged. **Which of the following tests of the rotator cuff should be intact in spite of this nerve damage?**

a) Internal (medial) rotation in the glenohumeral joint

b) “Empty can” test (internal rotation and extension of both arms against resistance)

c) Abduction of the arm from 0 to 90 degrees

d) External (lateral) rotation in the glenohumeral joint

3. A 15 year old male is struck on the wrist by a lacrosse ball. On examination in the emergency department there is swelling over the palmar aspect of the wrist. In the emergency department, he is unable to abduct or flex the MCP joints of the fourth and fifth fingers. A plain x-ray is ordered. **Which of the follow structures is likely to show a fracture given these findings?**

a) Scaphoid

b) Capitate

c) Lunate

d) Hook of the hamate

e) Styloid process of the ulna

f) Flexor retinaculum

g) Deep branch of the musculocutaneous nerve

4. A 66 year old male sustained an injury in his youth that resulted in loss of sensation over the palmar aspect of the right thumb and first two fingers of his left hand. Recently, the "numb" sensation has transformed to a chronic burning pain. The patient does not desire to take medications and seeks nerve stimulation of the nerve roots proximal to the brachial plexus to relieve the pain. **Which of the following spinal nerve roots would contribute to the peripheral nerve involved in this patient's chronic pain?**

a) C5, 6, 7

b) C6, 7, 8

c) C7, 8, and T1

d) C6, 7, 8, and T1

e) C5, 6, 7, 8, and T1