

**Graduate HUMAN GROSS ANATOMY – ANAT 503
EXAMINATION 5**

November 09, 2020

PART I. Answer in the space provided. (16 pts)

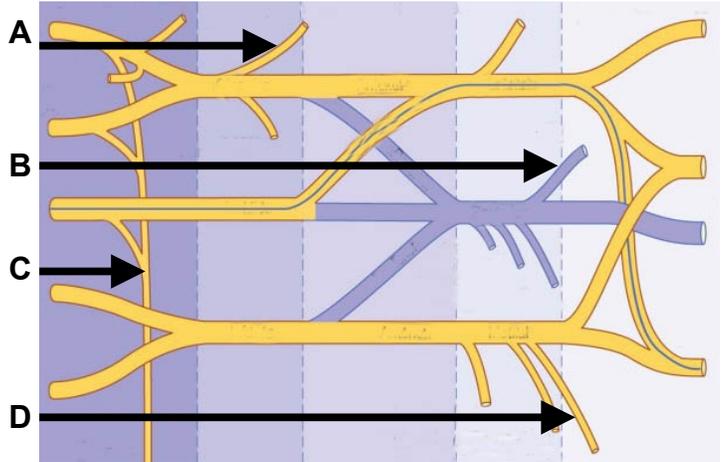
1. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



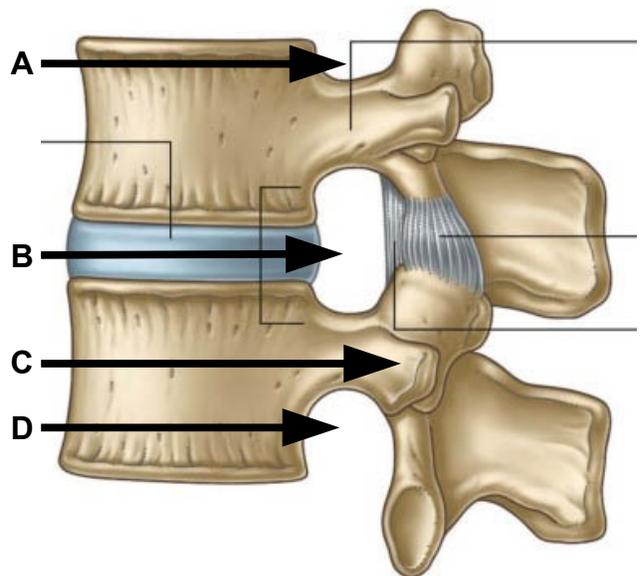
2. Identify the structures. (2 pts)

A. _____

B. _____

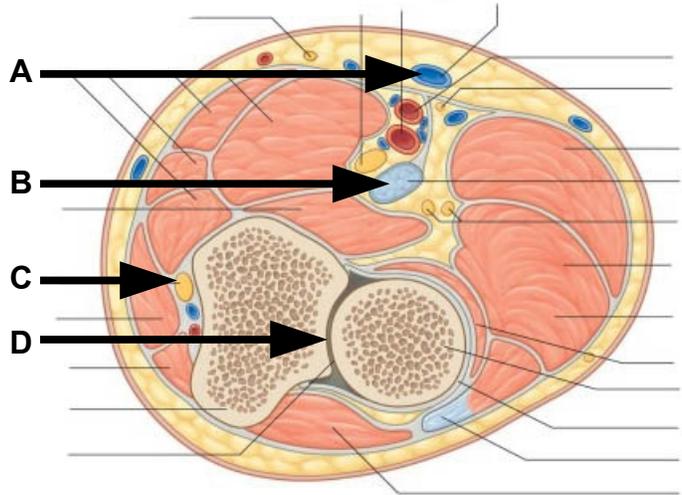
C. _____

D. _____



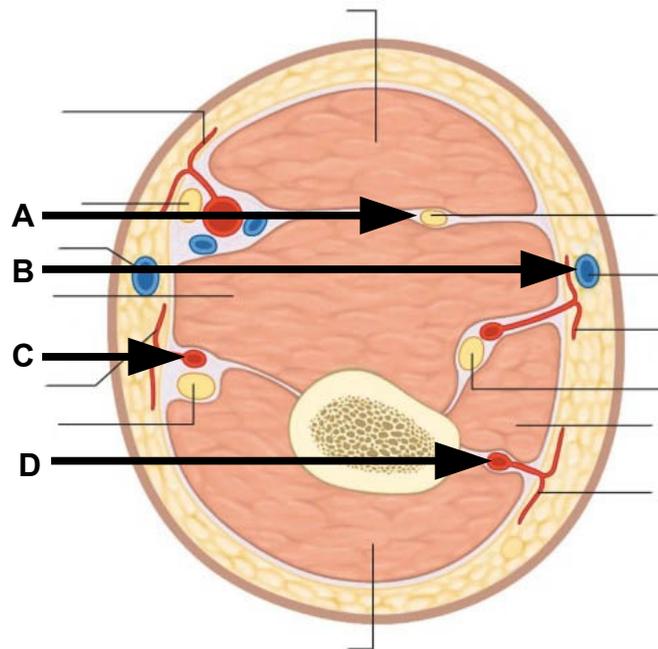
3. Identify the Structures. (2 pts)

- A. _____
- B. _____
- C. _____
- D. _____



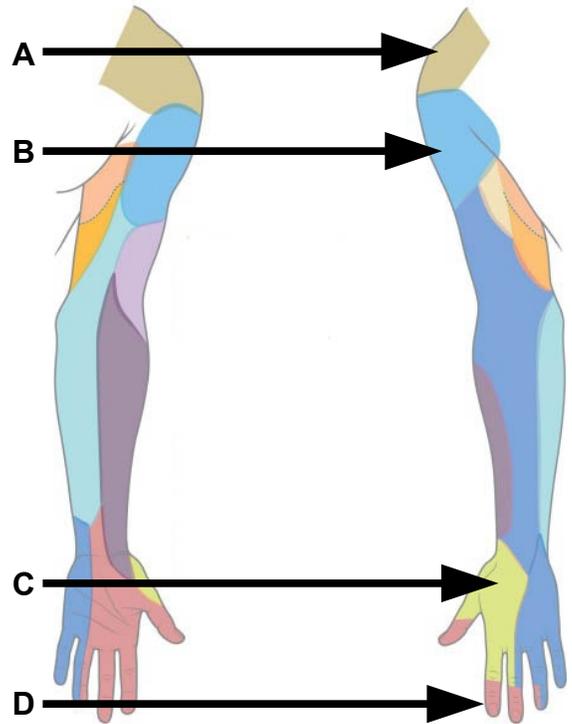
4. Identify the structures. (2 pts)

- A. _____
- B. _____
- C. _____
- D. _____



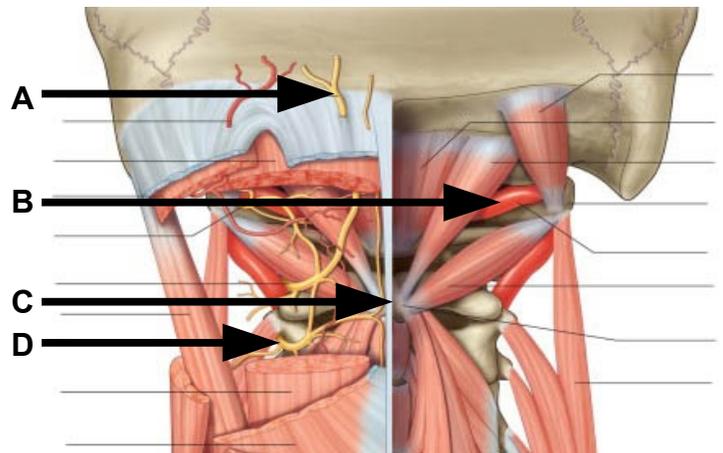
5. Identify the nerve distribution. (2 pts)

- A. _____
- B. _____
- C. _____
- D. _____



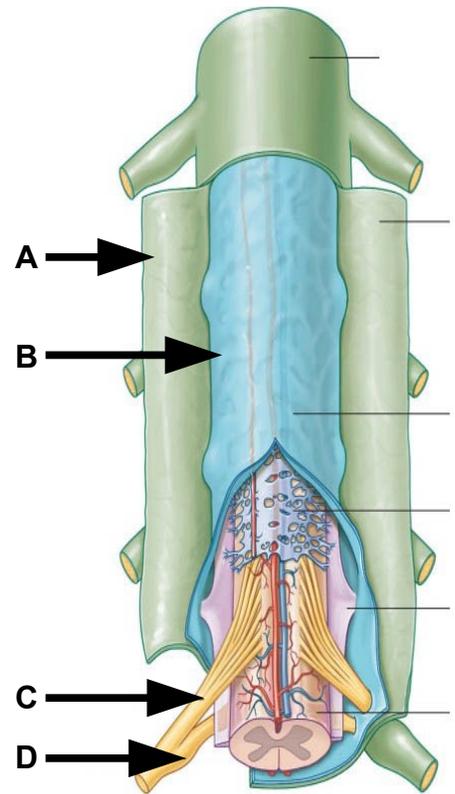
6. Identify the structures. (2 pts)

- A. _____
- B. _____
- C. _____
- D. _____



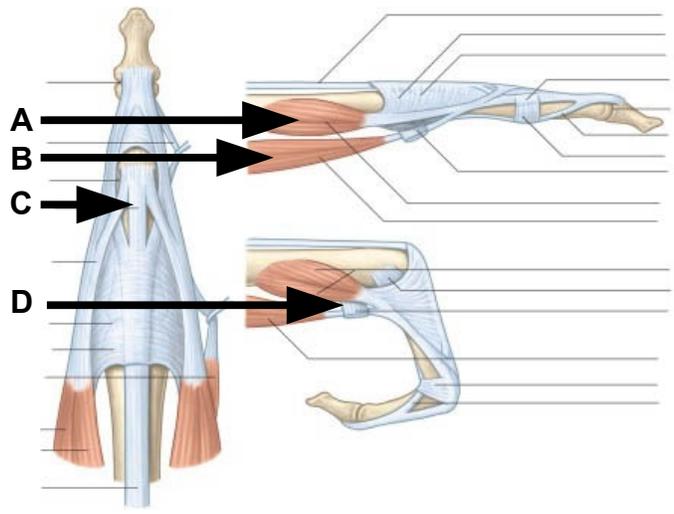
7. Identify the structures. (2 pts)

- A. _____
- B. _____
- C. _____
- D. _____



8. Identify the structures. (2 pts)

- A. _____
- B. _____
- C. _____
- D. _____



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) Erector spinae muscles are innervated by anterior branches of intercostal nerves.
- b) The atlantoaxial joint mediates rotation and the atlanto-occipital joint mediates flexion and extension.
- c) The dorsal scapular nerve passes lateral to the levator scapulae muscle.
- d) The dorsal scapular nerve and artery cross the spinoglenoid notch.
- e) The suboccipital nerve provides motor innervation to the muscles of the suboccipital triangle.
- f) Medial branches of dorsal rami are primarily motor and the lateral branches are primarily sensory.

2. With regard to the axilla and brachial plexus:

- a) Severance of the posterior cord of the brachial plexus causes uncompensated loss of flexion at the wrist.
- b) Erb's palsy primarily affects the shoulder and Klumke's palsy primarily affects intrinsic muscles of the hand.
- c) Musculocutaneous nerve injury at the axilla weakens pronation of the elbow.
- d) A lesion of the spinal accessory nerve weakens retraction of the scapula.
- e) Severance of the axillary nerve at the quadrangular space weakens all movements of the shoulder joint
- f) The ascending branch of the profunda brachii artery participates in an anastomosis at the shoulder joint.

3. With regard to the arm and cubital fossa:

- a) The median cubital vein passes deep to the bicipital aponeurosis.
- b) The brachial artery, but not the median cubital vein, is protected by the bicipital aponeurosis.
- c) The ulnar nerve and the inferior collateral ulnar artery enter the cubital tunnel.
- d) The anterior ulnar recurrent artery forms an anastomosis with the inferior ulnar collateral artery.
- e) Each of the four terminal branches of the brachial plexus contribute to extension at the elbow.
- f) The interosseous recurrent artery forms an anastomosis with the middle collateral artery.

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

- a) All muscles that arise from the common flexor tendon are biarticular.
- b) Brachioradialis abducts the wrist and extends the fingers.
- c) The posterior interosseous artery enters the posterior compartment of the forearm by passing the superior free edge of the interosseous membrane.
- d) The interosseous recurrent artery ascends toward the lateral humeral epicondyle by passing within anconeus.
- e) The tendons of the interosseous muscles pass posterior to the deep transverse metacarpal ligament and anterior to the transverse axis of the metacarpophalangeal joints.
- f) The anterior interosseous nerve passes posterior to pronator quadratus and provides sensory innervation to the carpal joints.

5. With regard to the hand:

- a) The ulnar two lumbricals are unipennate and innervated by the ulnar nerve and the radial two lumbricals are bipennate and innervated by the radial nerve.
- b) Cutaneous nerves that supply the palmar surface of the finger tips also supply the dorsal surfaces at the nail beds.
- c) The pisiform bone, a sesamoid bone, rests on the anterior surface of the triquetrum bone.
- d) The tendons of flexor digitorum superficialis split into medial and lateral slips that insert onto the base of the proximal phalanges.
- e) The origin of abductor digiti minimi is shared with the insertion of flexor carpi ulnaris.
- f) The natatory ligament is at the most distal part of the palmar aponeurosis.

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

- a) The ulnar collateral ligament blends with the annular ligament.
- b) The annular ligament attaches to the ulna at the radial tuberosity.
- c) A shoulder separation occurs at the sternoclavicular joint and a shoulder dislocation occurs at the acromioclavicular joint.
- d) The triangular fibrocartilage complex (TFCC) includes an articular disc that limits adduction at the wrist.
- e) Opposition of the thumb occurs at the metacarpophalangeal joint.
- f) The radial tuberosity moves anterior during pronation.

Part III. Indicate your understanding of the following. (30 pts)

- 1. The elbow anastomosis is not always robust. Cite the arteries and relationships of the elbow anastomosis. (6 pts)**

EXAM NUMBER _____

2. The circumflex scapular artery plays in key role in the pattern of blood flow following ligation of the axillary artery proximal to the subscapular artery. **Review the pattern of blood flow in the infraspinous fossa under normal conditions and under conditions when the axillary artery is ligated proximal to the subscapular artery. (6 pts)**

EXAM NUMBER _____

3. Fractures of the scaphoid bone are prone to causing avascular necrosis. **Provide a brief account for the boundaries, contents, and relationships of the anatomical snuffbox. (6 pts)**

EXAM NUMBER _____

4. Tendonitis and synovitis may occur in the region of the intertubercular sulcus. **Discuss the anatomy of the intertubercular sulcus. (6 pts)**

EXAM NUMBER _____

5. Thoracic outlet syndrome is caused by prolonged depression of the scapula. **Discuss the relationships of the levator scapulae muscle. (6 pts)**

EXAM NUMBER _____

Part IV. Essay. (36 pts)

1. The shoulder joint has extreme mobility paired with inherent instability. The head of the humerus and the glenoid fossa have been compared to a golf ball on a tee. Much of the support for glenohumeral joint is derived from soft tissues. **Review the anatomy of the glenohumeral joint. Include bones, articulations, ligaments, capsules, cavities, contents, muscles, movements and limitations of movement, vasculature , lymphatic drainage, innervation, and relationships. (12 pts)**

EXAM NUMBER _____

EXAM NUMBER _____

2. Narrowing of the spinal canal (spinal stenosis) is likely to cause bilateral symptoms. Narrowing of the intervertebral foramina is likely to cause unilateral symptoms. **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, innervations, and relationships. Include an account of the fascial layers penetrated during lumbar puncture. (12 pts)**

EXAM NUMBER _____

EXAM NUMBER _____

3. The ulnar nerve may become entrapped within the cubital tunnel or within the ulnar tunnel (Guyon's canal). **Review the anatomy of the cubital tunnel and the ulnar tunnel. Provide an account for the anatomical basis of the claw hand deformity. Compare functional deficits, resting positions, and deformities caused by damage to the ulnar nerve at the cubital tunnel and at the ulnar tunnel. (12 pts)**

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