EXAM NUMBER_____

HUMAN GROSS ANATOMY – ANAT 503
EXAMINATION 7

December 9, 2016

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

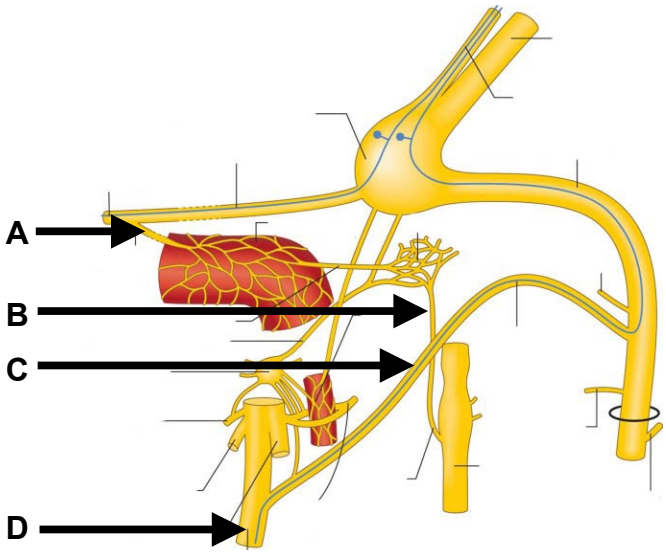
1. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



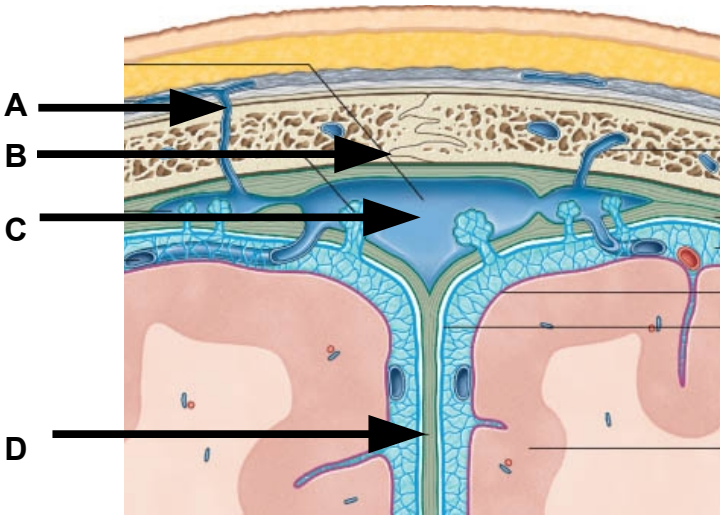
2. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



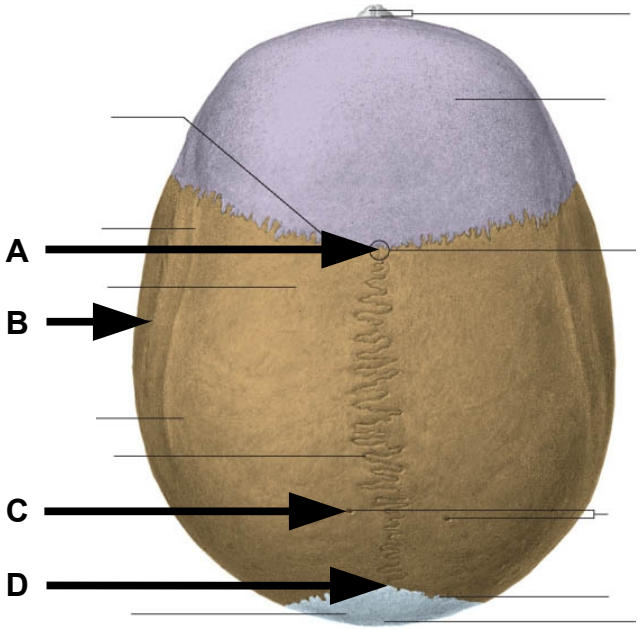
3. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



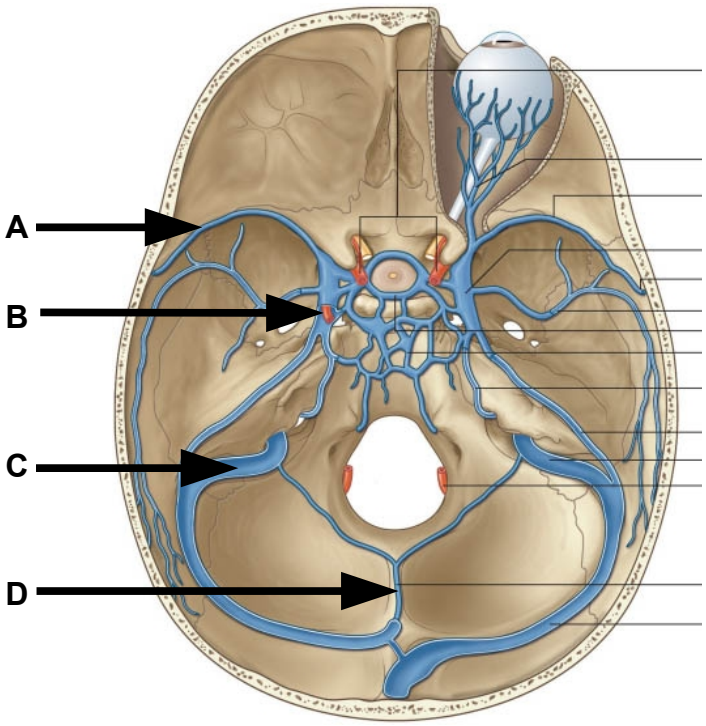
4. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



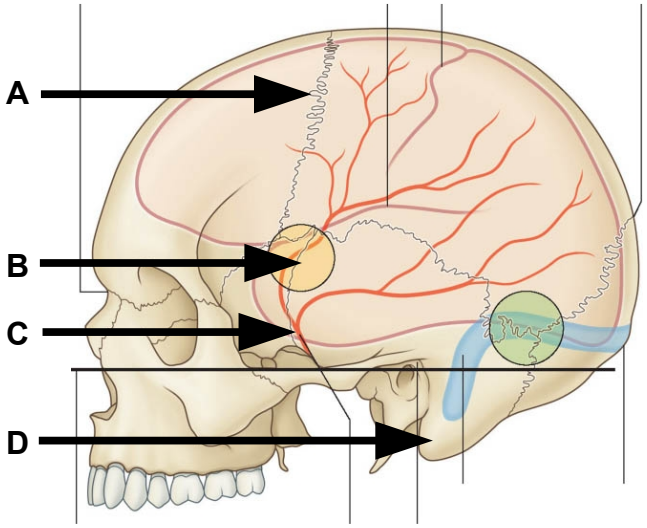
5. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



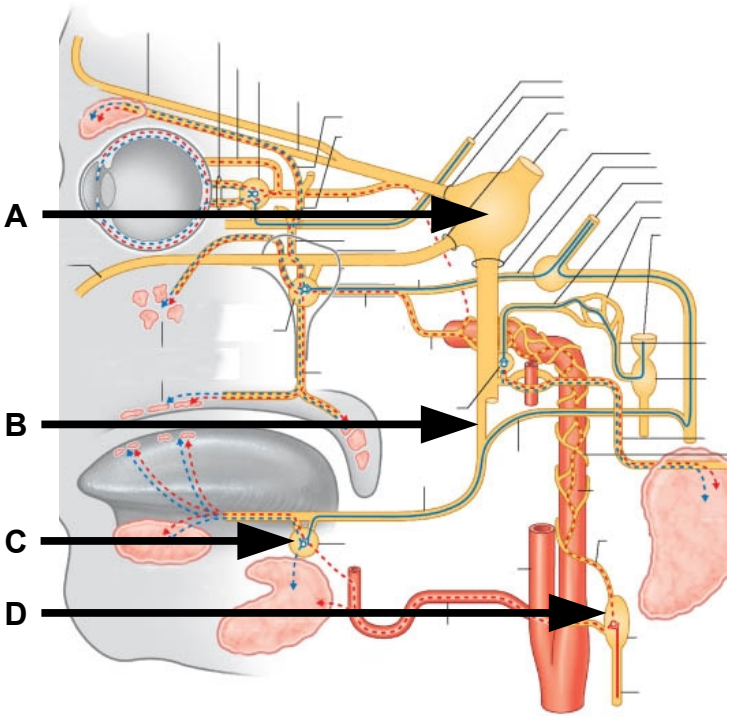
6. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



Part II. Circle the correct answer. All, none, or some may apply. (16 pts)

1. **With regard to the cranial nerves:**

   a) The olfactory fascicles pass through the cribriform plate to enter the nasal cavity.

   b) The recurrent tympanic nerve combines with the auriculotemporal nerve to form the buccal nerve.

   c) The glossopharyngeal nerve conveys GVA (General Visceral Afferent) and SVA (Special Visceral Afferent) fibers to the posterior 1/3 of the tongue.

   d) SVE (Special Visceral Efferent) fibers of the vagus nerve contribute to the elevation of the soft palate and to the equalization of air pressure within the middle ear.

   e) A deviated protrusion of the tongue to the left side indicates a lesion of the right hypoglossal nerve.

   f) The inferior division of the oculomotor nerve elaborates the motor root (short root) of the ciliary ganglion.

   g) A lesion of the glossopharyngeal nerve at the posterior tongue disrupts elevation of the larynx during swallowing, the gag reflex, salivary secretion, and taste sensation to the posterior one-third of the tongue.

   h) The GSA fibers that ultimately make up the external nasal nerve pass through the posterior, middle, and anterior cranial fossae, the cavernous sinus, orbit, anterior ethmoidal air cells, cribriform plate, and nasal cavity.

   i) The buccal nerve crosses the lateral side of the masseter muscle and provides GSA fibers to the skin of the cheek and to the mucosa lining the buccinator muscle.

2. **With regard to the anterior and posterior triangles of the neck:**

   a) Nerve fibers that form the nerve to thyrohyoid muscle are from the cervical plexus and travel with the hypoglossal nerve.

   b) Fibers from the cervical plexus travel with the hypoglossal nerve and then leave the hypoglossal nerve to form the inferior root of the ansa cervicalis.

   c) Prevertebral fascia separates the phrenic nerve and the transverse cervical artery.

   d) The spine of the sphenoid bone is a site of attachment for the sphenomandibular ligament.

   e) The external laryngeal nerve passes through the thyrohyoid membrane with the external laryngeal artery.

   f) The ansa subclavia circles the brachiocephalic artery lateral to the branching of the vertebral artery.

3. **With regard to the skull, face, and scalp:**

   a) The transverse facial artery crosses the lateral side of the masseter muscle superior to the crossing of the parotid duct.

   b) Parietal emissary veins may spread infections from the “loose areolar space” of the scalp to the superior sagittal sinus.

   c) The temporal branch of the facial nerve provides SVE fibers to the platysma muscle.

   d) The zygoma contributes to the lateral orbital wall and to the zygomatic arch.

   e) The facial vein crosses the mandible posterior to the facial artery.

4. **With regard to the temporomandibular joint, temporal fossa, and infratemporal fossa:**

   a) The mylohyoid line of the mandible is a site of origin for the mylohyoid muscle.

   b) Injury to the auriculotemporal nerve within the infratemporal fossa disrupts salivation from the parotid gland.

   c) The lesser superficial petrosal nerve passes from the tympanic cavity to the infratemporal fossa by way of either the foramen spinosum or the foramen ovale.

   d) The posterior superior alveolar nerve does not pass through the pterygomaxillary fissure.

5. **With regard to the cranial fossae and dural sinuses:**

   a) The inferior petrosal sinus passes into the jugular foramen to enter the internal jugular vein.

   b) The foramen cecum of the skull provides a venous communication between the superior sagittal sinus and the hyoid bone.

   c) The straight sinus, inferior sagittal sinus, and the great vein of Galen meet at the tentorial notch.

   d) The basilar venous plexus is on the posterior surface of the clivus.

6. **With regard to the larynx, pharynx, and oral cavity:**

   a) The buccinator muscle and the superior constrictor muscle have a common site of attachment at the pterygomandibular raphe.

   b) The palatoglossus, salpingopharyngeus, and tensor veli palatini muscles are innervated by the vagus nerve.

   c) The cough reflex is mediated by the GVA component of the glossopharyngeal nerve.

   d) The palatine tonsils are located within the pharyngeal arches defined by the palatoglossus and palatopharyngeus muscles.

Part III. Indicate your understanding of the following. (24 pts)

1. Viral cold infections are common. Bacterial sinus infections are less common. **Define the drainages of the paranasal air sinuses. Why is the maxillary sinus prone to bacterial infection? (6 pts)**

2. The larynx provides an airway for respiration and vocalization. **Review the anatomy and function of the posterior cricoarytenoid muscle. (6 pts)**

3. The nasopharynx participates in equalizing middle ear pressure and respiration. **Review the anatomy and functions of the opening of the auditory tube into the nasopharynx. (6 pts)**

4. Damage to the lingual nerve disrupts GSA (touch, temperature, pain, and pressure) sensation to the tongue. SVA (taste) sensation and GVE (salivation) may be intact or not depending on where the lingual nerve is damaged. The patient may appreciate the sweetness, but not the temperature, of a sip of coffee. **Provide an anatomical account for the dissociation of the GSA, GVE, and SVA functional components supplying the tongue based on damage to the lingual nerve. (6pts)**

Part IV. Long Essay. (48 pts)

1. A 12 year old girl is playing Little League baseball when she is struck in the right orbit by a batted ball. In the emergency department the soft tissues around her right eye are swollen to the extent that she cannot open her eye. Her globe is not ruptured but is displaced inferior. A CT scan reveals a fractured floor and medial wall of her right orbit. The inferior orbital fissure and its structures are compromised. **Review the anatomy of the orbit. Include bones, contents, relationships, fascial specializations, muscles, vasculature, innervation, and lymphatic drainage. Discuss the deficits resulting from injury to the structures passing through the inferior orbital fissure. (12 pts)**

2. A treatment for trigeminal neuralgia involving the maxillary nerve is to inject nerve blocking agents into the pterygopalatine fossa. **Discuss the pterygopalatine fossa. Include contents, relationships, communications, nerve distributions, and the expected consequences of blocking each nerve and functional component within the pterygopalatine fossa. (12 pts)**

3. A seventy two year-old male comes to your office with complaints of hoarseness and postnasal drip. You note the distinct smell of tobacco. He has ptosis of the left eye and the left pupil is smaller than the right. There is fullness over the left supraclavicular region. A Pancoast tumor is highly suspected. **Discuss the anatomy of the left vertebral triangle. Include boundaries, contents, relationships, fascial specializations, vasculature, innervation, lymphatic drainage, and the clinical significance of damage to structures in the area. (12 pts)**

4. An apical abscess of the lower molars may erupt into the floor of the mouth and then enter the submandibular space by way of the posterior free edge of the mylohyoid muscle. This infection may then erode into deeper cervical regions. **Discuss the spaces defined by the cervical fasciae. Include boundaries, contents, relationships, lymphatic drainage, and clinical significance. (12 pts)**