EXAM NUMBER_____

HUMAN GROSS ANATOMY – ANAT 503
EXAMINATION 7

December 12, 2014

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

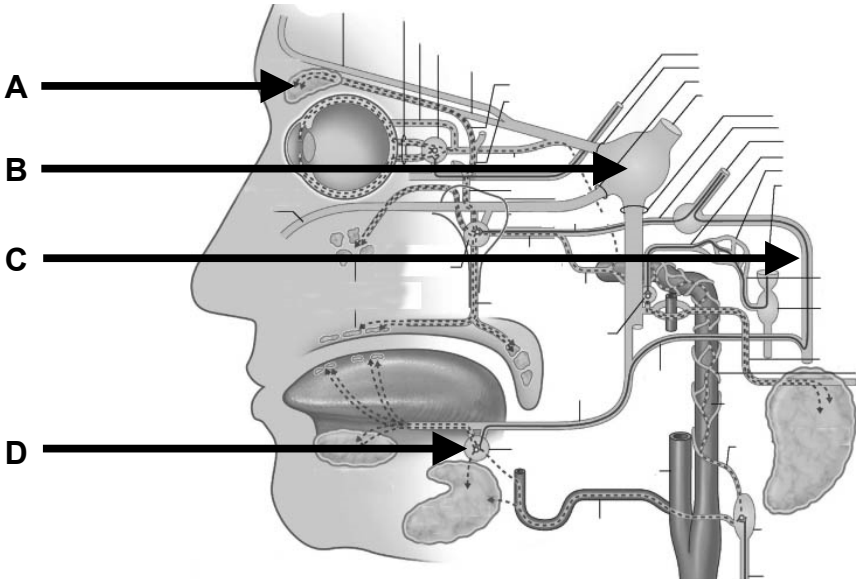
1. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



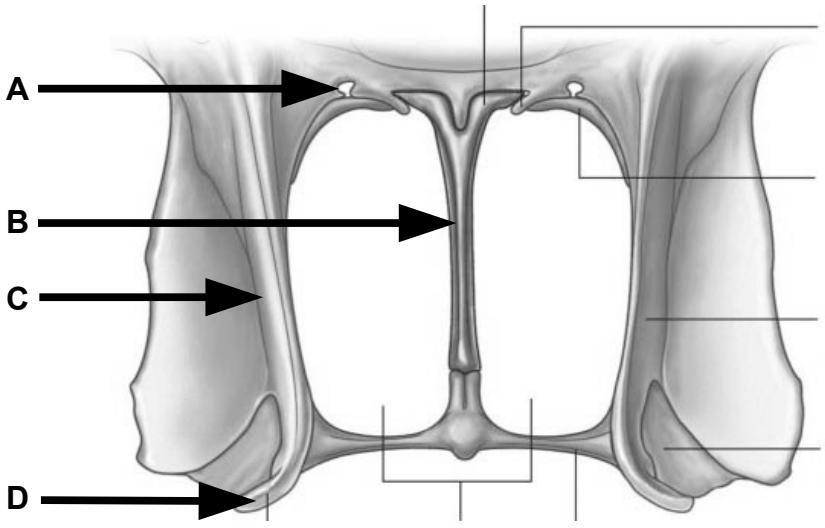
2. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



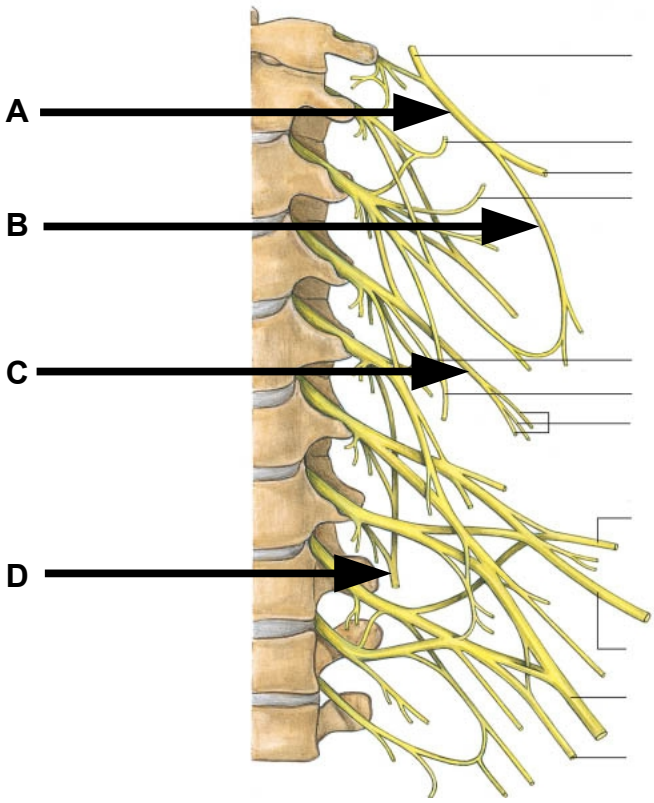
3. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



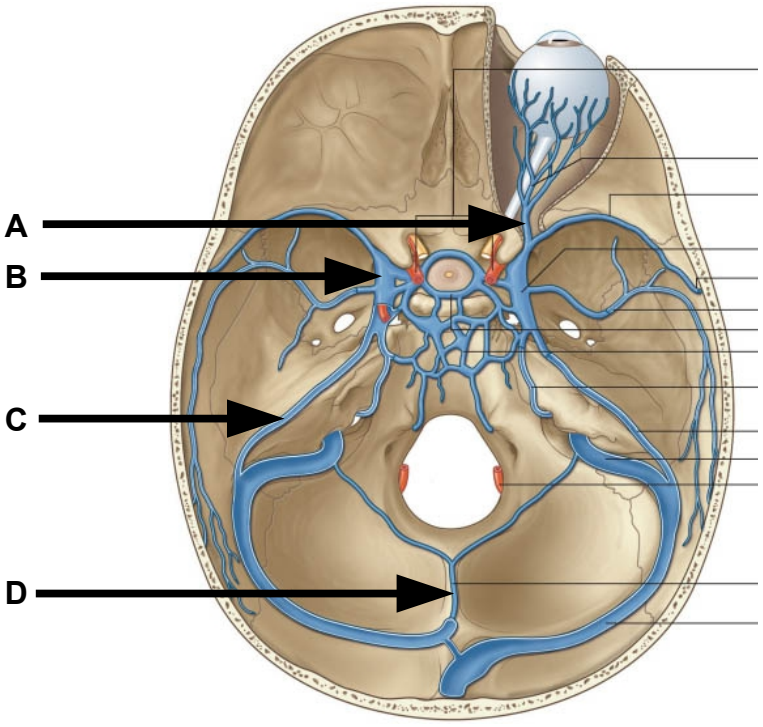
4. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



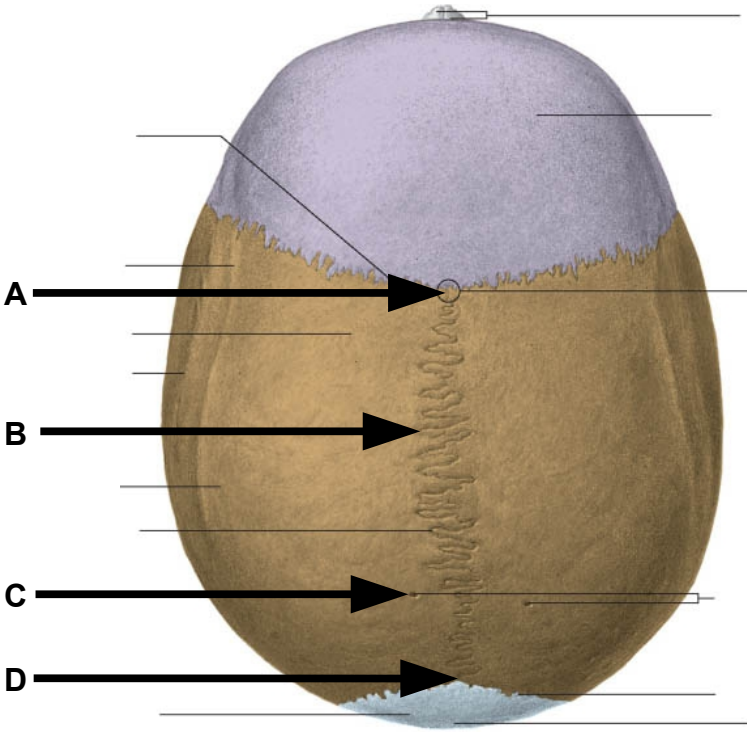
5. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



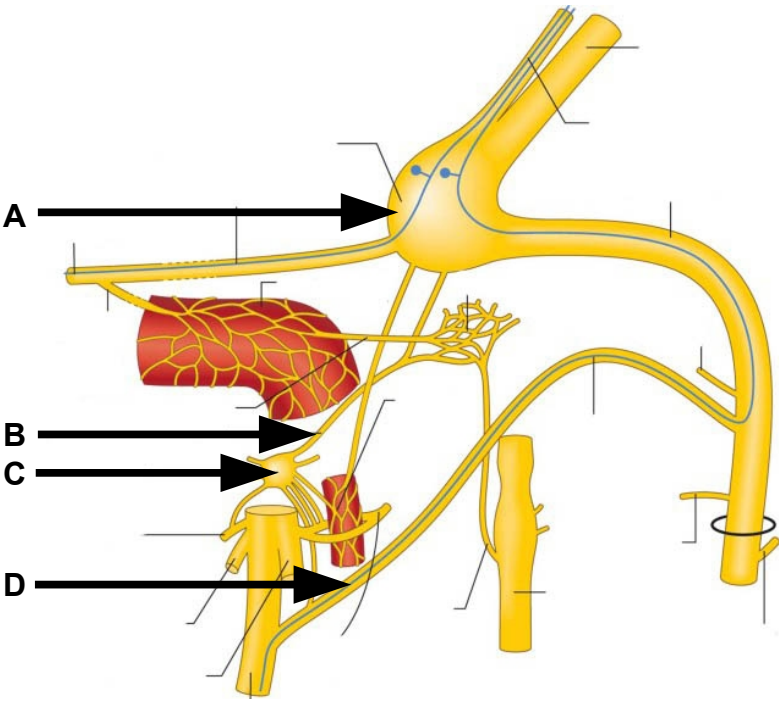
6. Identify the structures. (2 pts)

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) A pituitary tumor may compress the optic tracts and disrupt peripheral vision

   b) The deep petrosal nerve combines with the greater superficial petrosal nerve to form the nerve of the pterygoid canal.

   c) A lesion of the lingual nerve at the foramen ovale disrupts temperature, touch, and pain sensation (GSA) to the ipsilateral anterior two thirds of the tongue but does not disrupt taste sensation (SVA).

   d) The SVE functional component of the facial nerve contributes 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 right side indicates a lesion of the left hypoglossal nerve.

   f) The greater superficial petrosal nerve controls watery, but not thick, salivary secretion from the submandibular gland.

   g) A lesion of the glossopharyngeal nerve at the jugular foramen disrupts elevation of the larynx during swallowing, the gag reflex, salivary secretion, and taste and touch 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 recurrent tympanic nerve, a branch of the glossopharyngeal nerve, enters the tympanic cavity to provide SVE innervation to the tensor tympani muscle.

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

   a) Nerve fibers that form the nerve to thyrohyoid travel with the inferior root of the ansa subclavia.

   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 subclavia.

   c) The cricothyroid muscle raises the pitch of the voice.

   d) The lingula of the mandible is a site of attachment for the sphenomandibular ligament.

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

   f) The ansa subclavia circles the subclavian artery lateral to the branching of the internal thoracic artery.

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

   a) The buccal branch of the facial nerve provides GVA fibers to the mucosa lining of the buccinator muscle and SVE fibers to the parotid gland.

b) Parietal emissary veins may spread infections from the “loose areolar space” of the scalp to the intracranial venous sinuses.

c) The buccal nerve, derived from the mandibular division of the trigeminal nerve, provides GSA fibers to the oral mucosa that lines the internal surface of the buccinator muscle.

d) The parotid duct pierces the buccinator muscle adjacent to the upper second molar.

e) The occipitalis belly of the occipitofrontalis muscle is innervated by SVE fibers from the greater occipital nerve.

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 chorda tympani nerve passes through the middle ear and then enters the infratemporal fossa by way of the mastoid canaliculus.

d) The inferior orbital fissure provides a bony communication between the infratemporal fossa and the orbit.

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

a) The superior petrosal sinus passes inferior to the trigeminal nerve.

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

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

d) The diaphragma sellae forms a dural shelf superior to the hypophyseal fossa and contains the intercavernous sinuses.

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 and salpingopharyngeus muscles are innervated by the vagus nerve.

c) The levator veli palatini, tensor veli palatini, and salpingopharyngeus muscles contribute to the movements of swallowing and to the equalization of air pressure in the middle ear.

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

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

1. **A patient has difficulty swallowing due to unilateral impaired elevation of the pharynx. Additionally, touch and taste to the ipsilateral posterior one-third of the tongue is perturbed. Nonetheless, there are no salivary deficits. Provide an account of these symptoms based on cranial nerve anatomy. (6 pts)**

2. The larynx provides a patent airway for respiration and a restricted airway for vocalization. **Review the anatomy of the posterior cricoarytenoideus muscle. (6 pts)**

3. Lacerations of the scalp that penetrate the epicranial aponeurosis carry the risk of intracranial infection. **Review the loose areolar space of the scalp and account for the anatomy that may spread an infection from this space. (6 pts)**

4. A blow to the side of the head may cause loss of consciousness followed by regaining consciousness only to conclude with death. **Review the anatomy of the pterion and account for the events that may to death if this region is fractured. (6pts)**

Part IV. Long Essay. (12 pts)

1. An infection of the cavernous sinus may perturb functions of the orbit. **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 superior orbital fissure. What grave condition is indicated by pulsatile exophthalmos? (12 pts)**

2. A treatment for trigeminal neuralgia 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. Infections of the lower second molar may spread into the thorax and abdomen. Airway obstruction and death my ensue. **Discuss the spaces defined by the cervical fasciae. Include boundaries, contents, relationships, lymphatic drainage, and significance. (12 pts)**

4. A 72 year-old male comes to your office with complaints of hoarseness. He has noticed it for three weeks. He thinks he has “allergies” causing some post nasal drip that has resulted in his hoarseness. His only other complaint is blurred vision. On exam, you note the distinct smell of tobacco. He has mild ptosis and a constricted pupil of the left eye. **Discuss the anatomy of the left vertebral triangle. Include boundaries, contents, relationships, fascial specializations, vasculature, innervation, lymphatic drainage, and the clinical significance of perturbing structures in this region. (12 pts)**