EXAM NUMBER_____

STRUCTURAL BASIS OF MEDICAL PRACTICE
EXAMINATION 7

October 21, 2011

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

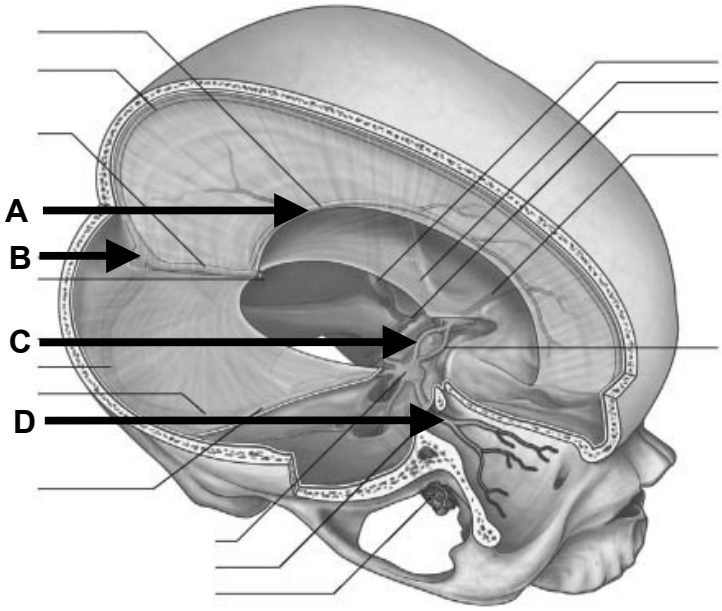
1. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



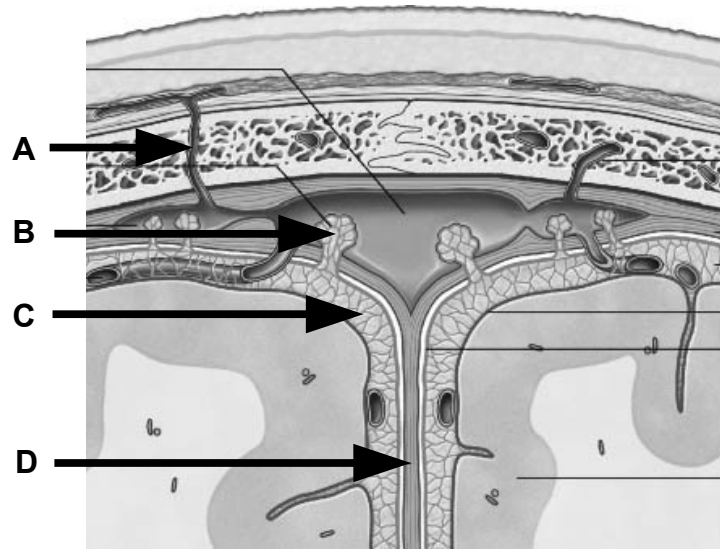
2. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



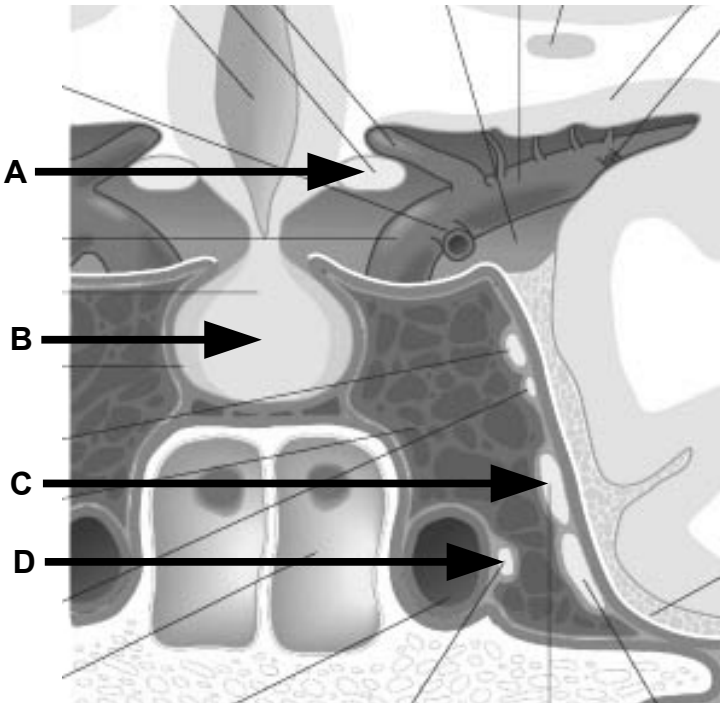
3. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



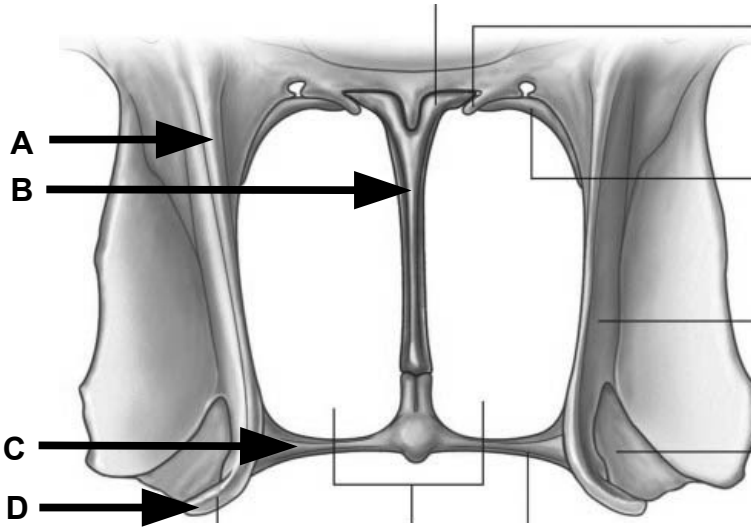
4. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



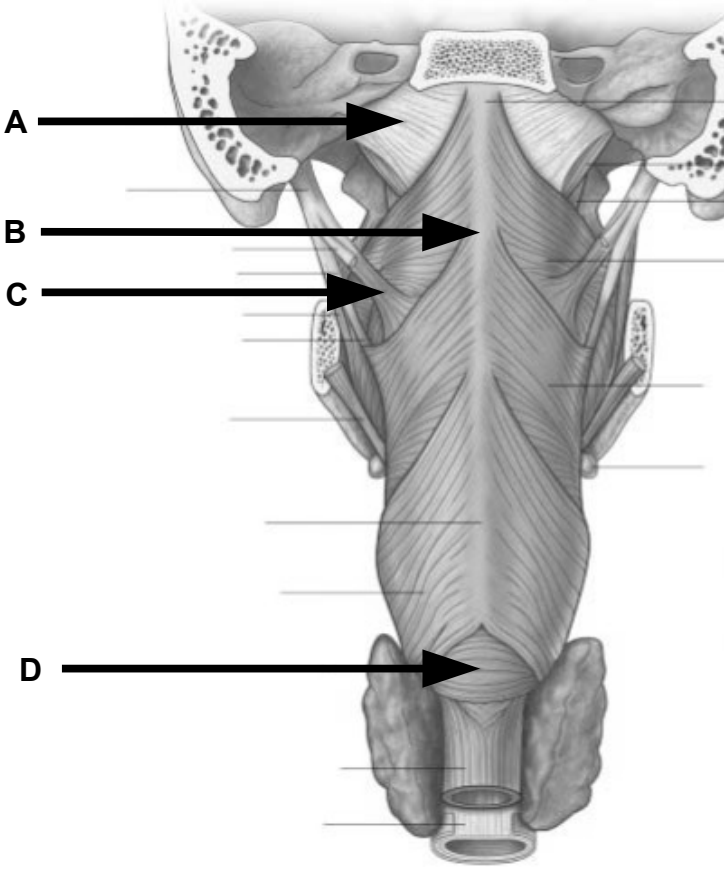
5. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



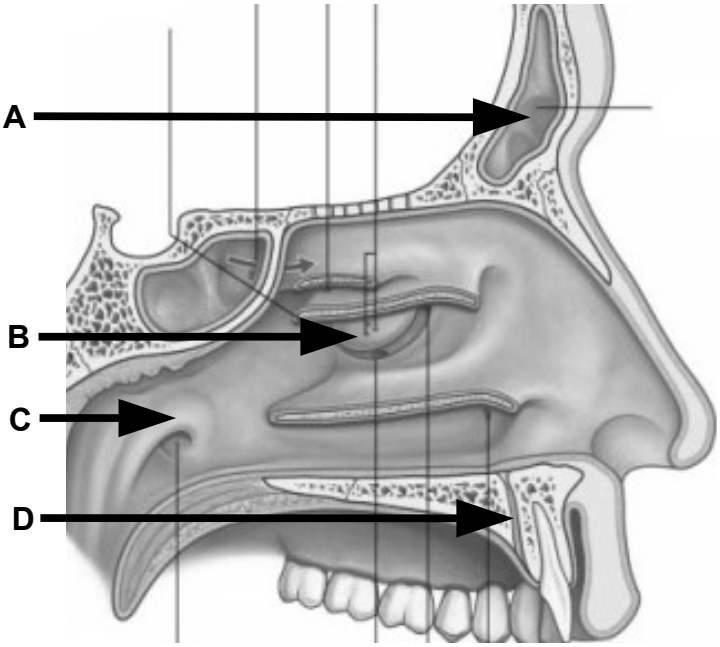
6. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



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

1. With regard to the cranial nerves:

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

    b. The efferent limb of the pupillary light reflex is mediated by the motor (SVE) component of the facial nerve.

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

    d. The sphenopalatine foramen provides a bony communication between the pterygopalatine fossa and the oropharynx.

    e. The lateral posterior nasal nerves convey parasympathetic (GVE) nerves from the ciliary ganglion to the maxillary sinus.

    f. The short ciliary nerves convey GSA and GVE functional components that innervate the eye.

    g. A lesion of the lingual nerve at the floor of the mouth disrupts temperature, touch, and pain sensation (GSA) from the ipsilateral anterior two thirds of the tongue but does not disrupt salivation from the parotid gland.

    h. A lesion of the facial nerve at the internal acoustic meatus causes hyperacusis (sensitivity to loud sounds).

    i. A lesion of the lesser superficial petrosal nerve disrupts taste sensitivity to the hard palate.

    j. A lesion of the deep petrosal nerve causes nasal congestion and a runny nose.

    k. A lesion of the facial nerve at the stylomastoid foramen causes difficulty in positioning food in the occlusal plane and dryness of the mouth.

    l. The SVE functional component of the maxillary division of the trigeminal nerve innervates the muscles of mastication

    m. The vestibulocochlear nerve conveys SSA fibers from the cochlea.

    n. The posterior auricular branch of the facial nerve enters the tympanic cavity by passing through the tympanic canaliculus.

    o. A lesion of the recurrent tympanic branch of the glossopharyngeal nerve disrupts watery salivary secretions from the submandibular gland.

    p. A lesion of the glossopharyngeal nerve at the jugular foramen disrupts elevation of the larynx, the cough reflex, and taste sensation from the anterior two-thirds of the tongue.

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

    a. The ansa cervicalis conveys motor fibers from the cervical plexus to the posterior belly of the omohyoid muscle.

    b. The dorsal scapular and long thoracic nerves pierce the middle scalene muscle.

    c. The great auricular nerve ascends the lateral surface of the sternocleidomastoid muscle in close proximity to the retromandibular vein.

    d. The spinal accessory nerve crosses the sternocleidomastoid muscle inferior to the crossing of the transverse cervical nerve.

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

    a. The inferior temporal line is a site of attachment for the epicranial aponeurosis.

    b. Fibers of the infraorbital nerve pass through the cavernous sinus and are derived from from the ophthalmic division of the trigeminal nerve.

    c. The mandibular branch of the facial nerve conveys sensory innervation (GVA) from the buccinator muscle.

    d. The external nasal nerve is derived from the ophthalmic division of the trigeminal nerve and is the terminal distribution of the anterior ethmoidal nerve.

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

    a. The buccal nerve provides motor innervation (SVE) to the buccinator muscle.

    b. The posterior superior alveolar nerve contributes to the superior dental plexus and then continues onto the face as the mental nerve.

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

    d. The mandible cannot be elevated if the condyle of the mandible dislocates anterior to the articular tubercle.

    e. The hamulus of the medial pterygoid plate provides a pulley for the aponeurosis of the tensor veli palatini muscle.

    f. A lesion of the lingual nerve at the foramen ovale disrupts touch (GSA) but not taste (SVA) to the anterior 2/3 of the tongue.

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

    a. The medial wall of the cavernous sinus is adjacent to the anterior ethmoidal air cells.

    b. The superior petrosal sinus passes inferior to the trigeminal nerve.

c. The foramen cecum provides a direct venous communication between the inferior sagittal sinus and the nasal cavity.

d. The cavernous sinus has direct communications with the superior petrosal sinus, inferior petrosal sinus, basilar venous plexus, sphenoparietal sinus, ophthalmic vein, and retromandibular vein.

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

a. The posterior free edge of the mylohyoid muscle provides a path for infections of the upper molar teeth to spread to the spaces defined by cervical fascia.

b. The buccinator muscle and the middle constrictor muscle have a common site of attachment at the pharyngeal raphe.

c. The cricoid cartilage is a fibrocartilagenous ring having cartilage for the anterior and lateral walls and a fibrous posterior wall.

d. The lateral cricoarytenoid muscle abducts the false vocal fold.

7. With regard to the temporal bone and ear:

a. The footplate of the stapes is oval and attaches to the round window.

b. The deep surface of the tympanic membrane faces the middle ear and is supplied by GVA fibers from the recurrent tympanic branch of the glossopharyngeal nerve.

c. The tensor tympani and the stapedial muscles dampen movement of the ossicles.

d. Equilibration of air pressure within the middle ear is facilitated by the actions of the tensor veli palatini muscle.

e. The geniculate ganglion is located along the horizontal part of the facial nerve and the chorda tympani branches from the vertical part of the facial nerve.

f. The chorda tympani nerve passes through the external ear on the internal surface of the tympanic membrane.

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

1. A 61-year-old female complains of coughing when she swallows. Her physical examination reveals weakness in elevating the floor of the mouth and larynx. **Provide a developmental account for the adult anatomy, innervation, and function of the digastric muscle. (6 pts)**

2. A 31-year-old male complains of a dry mouth. His physical examination reveals bruising along the neck of the mandible. The patient reported being hit by a wildly pitched baseball. A disruption of the nervous supply to the parotid gland is highly suspected. **Discuss the anatomy of the otic ganglion and its preganglionic and postganglionic nervous pathways. (6 pts)**

3. A 46-year-old male complains of double vision and sensitivity to light. His physical examination reveals a dilated right pupil. Double vision is present on downward gaze. Entrapment of the inferior division of the oculomotor nerve at the annulus tendineus is highly suspected. **Discuss the anatomy of the annulus tendineus and cite the structures that pass through it. (6 pts)**

4. A 50-year-old male complains of neck pain and shortness of breath. His tongue is elevated and posteriorly displaced. His neck has firm edema and is warm and tender to the touch. He has multiple deep dental caries. You hear a high pitched noise (stridor) in his neck but not in his lungs. An X-ray of his teeth shows an apical abscess on the lower left second molar. Ludwig's angina is highly suspected. **Discuss the boundaries, relationships, and significance of the retropharyngeal space. (6 pts)**

5. A 45-year-old female complains of numbness along the left side of her chin and tongue. Her physical examination reveals a unilateral loss of touch sensation to the anterior two-thirds of her tongue. Nevertheless, her ability to taste is unimpaired. A tumor of the left mandibular nerve at the foramen ovale is highly suspected. **Provide a developmental account for the adult anatomy, function, and innervation of the tongue. (6 pts)**

Part IV. Answer in the space provided. Include the back of each page if required). (36 pts)

1. A 12-year-old girl was struck in the right eye by a baseball. A CT scan reveals fractures of the lateral orbital wall with bone fragments in the pterygopalatine fossa. Sensory disturbances affect the distribution of the maxillary nerve. **Discuss the distribution of the maxillary division of the trigeminal nerve. Include foramina, spaces, and functional components. Predict the neural deficits that may result from lesions at different locations along the course of the zygomaticotemporal nerve. (12 pts)**

2. 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, and lymphatic drainage. (12 pts)**

3. A 57-year-old male underwent a left hemithyroidectomy for a benign adenoma. The patient complains of persistant hoarseness. He also notes occasional coughing, a sense of shortness of breath, and vocal fatigue. Operative damage to the left recurrent laryngeal nerve is indicated. **Review the anatomy of the larynx. Include bones, cartilages, spaces, boundaries, ligaments, muscles, movements and limitations of movement, vasculature, innervation and functional components, relationships to surrounding structures, lymphatic drainage, and function. (12 pts)**