EXAM NUMBER_____

STRUCTURAL BASIS OF MEDICAL PRACTICE
EXAMINATION 7

October 24, 2008

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

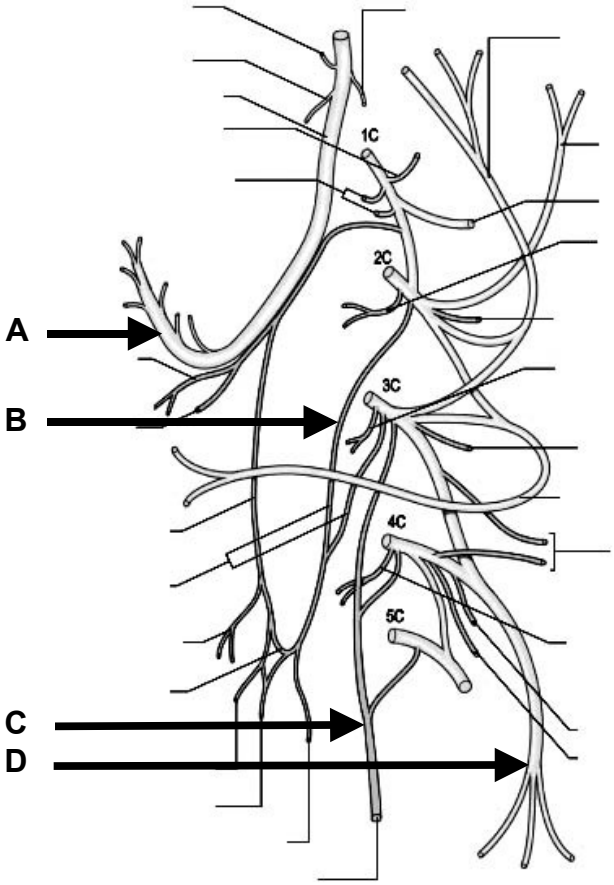
1. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



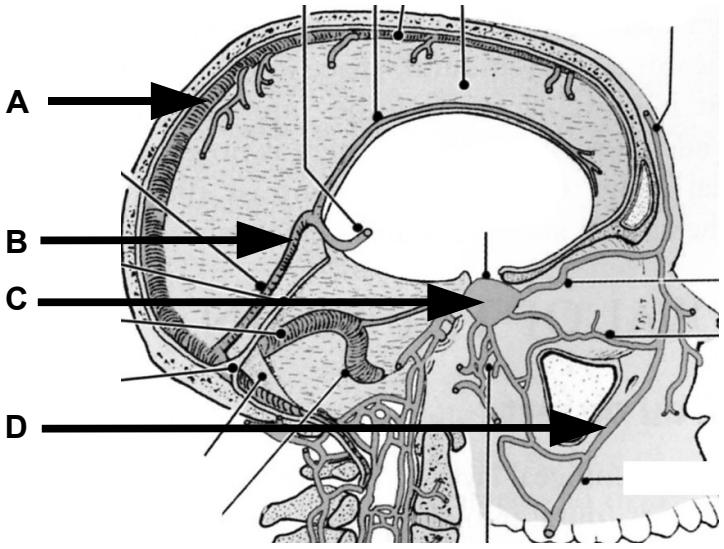
2. Identify the structures. (2 pts)

A. _____

B. _____

C. _____

D. _____



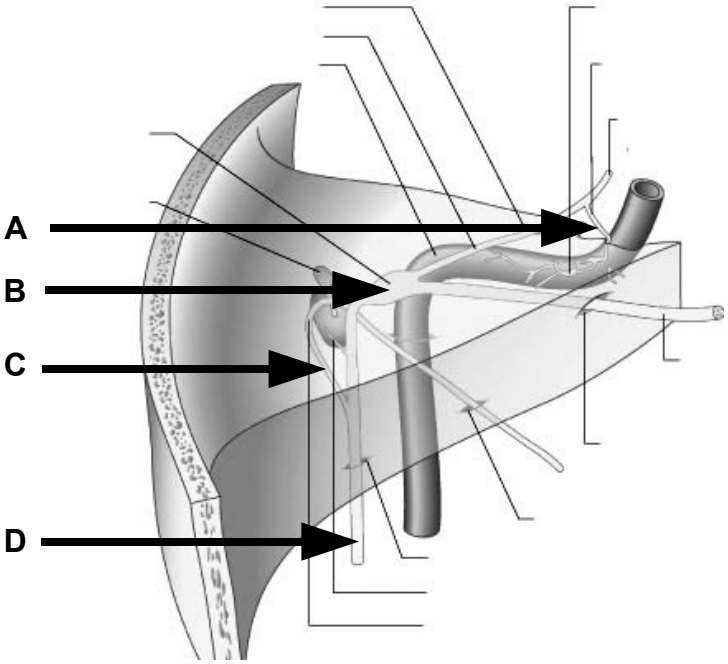
3. Identify the structure. (2 pts)

A._____

B. _____

C. _____

D. _____



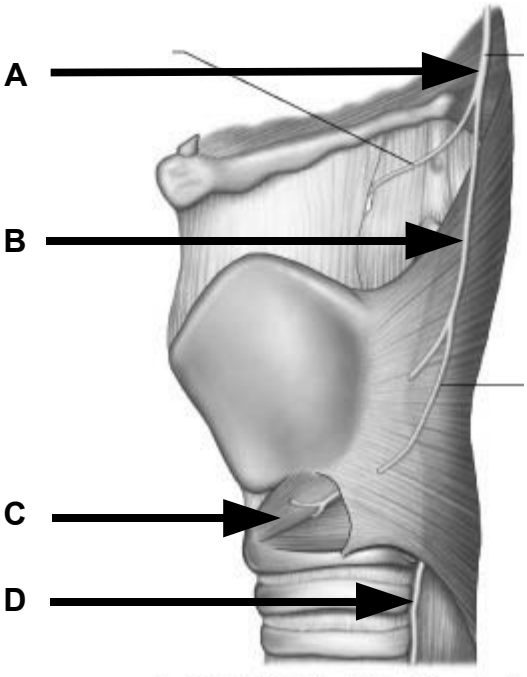
4. Identify the structure. (2 pts)

A. _____

B. _____

C. _____

D. _____



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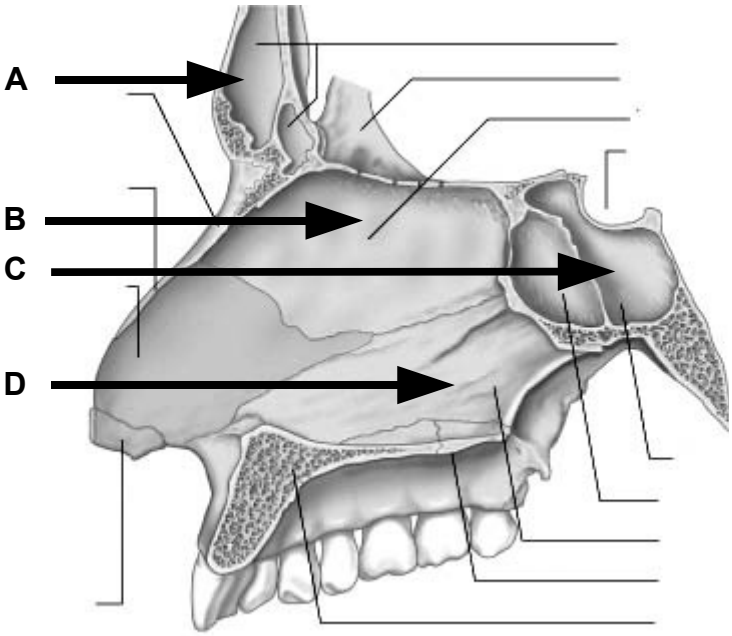
5. Identify the structure. (2 pts)

A. _____

B. _____

C. _____

D. _____



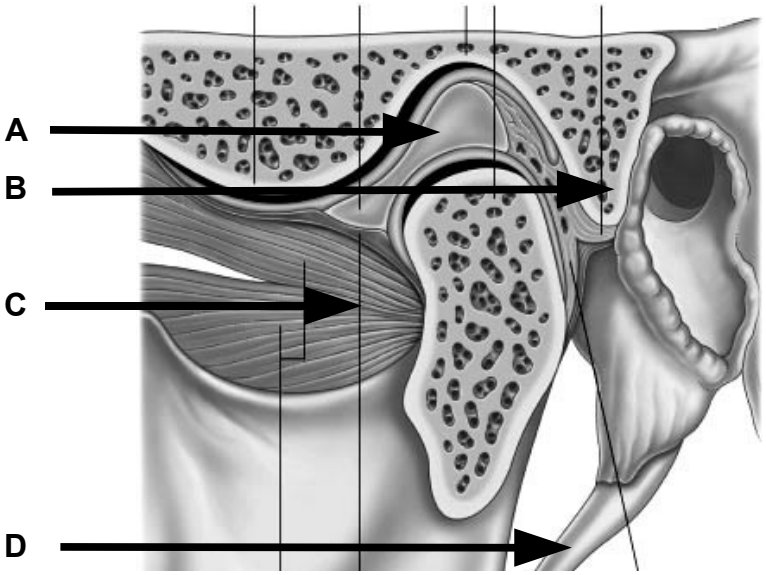
6. Identify the structure. (2 pts)

A. _____

B. _____

C. _____

D. _____



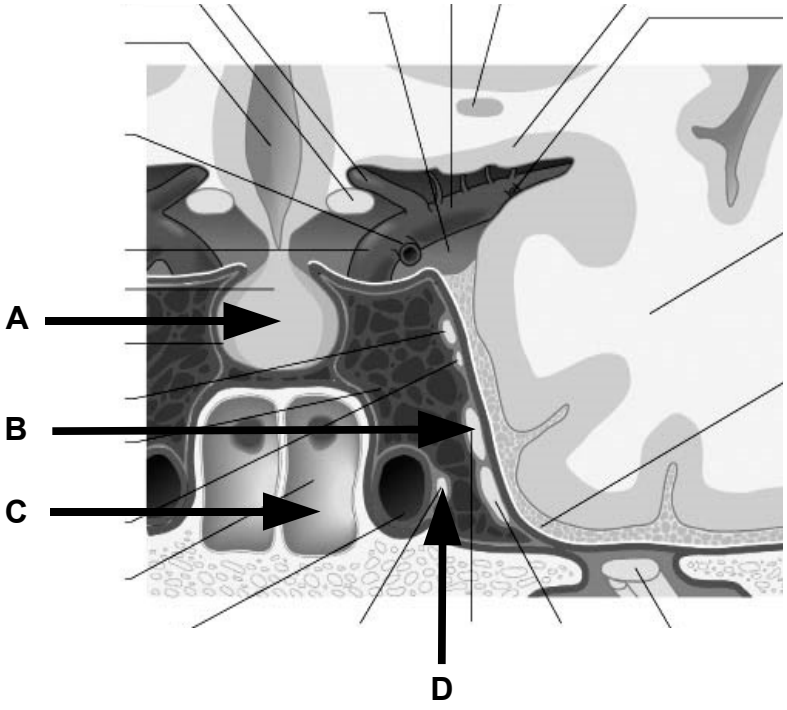
7. Identify the structure. (2 pts)

A. _____

B. _____

C. _____

D. _____



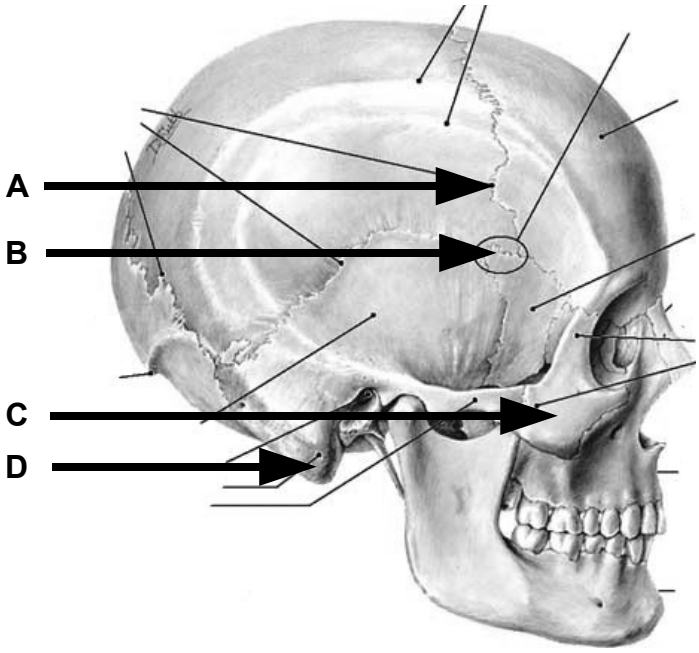
8. Identify the structure. (2 pts)

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 nerve exits the posterior cranial fossa to enter the nasal cavity by passing through the cribriform plate of the ethmoid bone.

    b. The optic nerve exits the middle cranial fossa by passing through the superior oribital fissure.

    c. The oculomotor nerve exits the middle cranial fossa by passing through the superior orbital fissure and then through the annulus tendineus (common tendineus ring of Zinn).

    d. The trochlear nerve exits the cavernous sinus passing through the optic canal.

    e. The maxillary nerve exits the middle cranial fossa to enter the pterygopalatine fossa by passing through the pterygoid canal.

    f. The trigeminal nerve exits the posterior cranial fossa to enter the middle cranial fossa by passing superior to the the superior petrosal ridge and inferior to the superior petrosal sinus.

    g. The GSA fibers that ultimately make up the external nasal nerve pass through the three cranial fossa, cavernous sinus, orbit, anterior ethmoidal air cells, cribriform plate, and nasal cavity before entering the face.

    h. The abducens nerve crosses the lateral surface of the carotid siphon within the cavernous sinus before exiting the middle cranial fossa by passing through the superior orbital fissure.

    i. The greater superficial petrosal nerve leaves the genu of the facial canal to enter the middle cranial fossa by passing through the hiatus of the canal for the greater superficial nerve.

    j. The chorda tympani nerve leaves the inner ear to enter the infratemporal fossa by passing through the tympanic canaliculus.

    k. The vestibulocochlear nerve enters the temporal bone by passing through the external auditory meatus.

    l. The tympanic branch of the glossopharyngeal nerve enters the region of the middle ear by passing through the mastoid canaliculus.

    m. The glossopharyngeal, vagus, and spinal accessory nerves leave the posterior cranial fossa by passing through the medial compartment of the jugular foramen.

    n. The hypoglossal nerve leaves the posterior cranial fossa by passing through the condylar canal.

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

    a. Parietal emissary veins participate in spreading infections from the “loose areolar space” of the scalp to intracranial locations.

    b. Ligating veins surrounding the orbit effectively prevents facial abscesses from spreading to the cavernous sinus.

    c. Skull fractures limited to the region of the pterion may rupture the maxillary artery within the infratemporal fossa and cause an epidural hematoma.

d. The buccal branch of the facial nerve provides GVA fibers to the mucosa lining of the buccinator muscle and GVE fibers to the parotid ganglion.

3. With regard to the cavernous sinus:

a. An infection (or thrombosis) of the cavernous sinus is suspected when a facial abscess is paired with an adducted eye.

b. Erosion of the internal carotid artery within the cavernous sinus causes an arteriovenous shunt and pulsatile exophthalmos in synchrony with heart rate.

c. Trochlear nerve palsy causes an extorted (laterally rotated) eye.

d. Oculomotor nerve palsy without palsy of the sympathetic root of the ciliary ganglion causes a dilated (blown) pupil.

e. An untreated cavernous sinus infection spreads to the other cavernous sinus by passing through the intercavernous sinus of the diaphragma sellae.

f. A loss of palatal taste paired with a dry eye and dry nasal mucosa is accounted for by a lesion of the nerve of the pterygoid canal.

4. With regard to the pterygopalatine fossa:

a. SVA fibers from the lesser superficial petrosal nerve arrive at the hard and soft palate by traveling within the greater and lesser palatine nerve branches from the mandibular nerve.

b. A postganglionic GVE nerve root conveys parasympathetic fibers from the pterygopalatine ganglion to the maxillary nerve. These fibers then follow the zygomatic nerve into the orbit and then follow the zygomaticotemporal nerve along the superior lateral orbital wall. Finally, they communicate to the lacrimal nerve and travel to the lacrimal gland.

c. GSA and GVE fibers innervating the mucosa of the ethmoidal bulla pass through the pharyngeal canal.

d. The posterior part of the superior alveolar dental plexus receives GSA innervation from the posterior superior alveolar nerve branch of the mandibular nerve.

5. With regard to the temporal bone and ear:

a. The external ear canal is 1/3 cartilaginous and the auditory tube is 2/3 cartilaginous.

b. The chorda tympani nerve passes medial to the malleus and lateral to the incus.

c. The tensor tympani muscle is innervated by SVE fibers from the trigeminal nerve and the stapedius muscle is innervated by GSE fibers from the facial nerve.

d. The posterior inferior bony wall of the mastoid air cells is shared with the occipital sinus.

Part III. Indicate your understanding (characteristics, importance, function, relationships, boundaries and/or contents) of the following. Answer in the space provided. (16 pts)

1. Superior cervical sympathetic trunk ganglion and Horner's syndrome. (4 pts)

2. Tensor veli palatini. (4 pts)

3. Arytenoid cartilage. (4 pts)

4. Mastoid air cells. (4 pts)

Part IV. Indicate your understanding (characteristics, importance, function, relationships, boundaries and/or contents) of the following. Answer in the space provided. (16 pts)

1. Confluence of the sinuses. (4 pts)

2. Nerve supply and functional components to the tongue. (4 pts)

3. Piriform recess. (4 pts)

4. Sphenoid sinus. (4 pts)

Part V. Answer in the space provided (including the back of the page or the additional pages for each question). (36 pts)

1. A 15 year old girl riding her bike without a helmet sustained a fracture of the floor of the middle cranial fossa. This fracture opened a communication between the infratemporal fossa and the middle cranial fossa. **Review the anatomy of the infratemporal fossa. Include bones, boundaries, contents, bony communications, ligaments, muscles, movements and limitations of movement, vasculature and venous communications, innervation and functional components, relationships to surrounding structures, lymphatic drainage, and significance. (12 pts)**

2. A 46 year old male complains of blurred vision while driving at night. On exam, his pupils are 3 mm and symmetric. When the lights are dimmed, however, his right pupil dilates to 5 mm and the left remains constricted. **Review the anatomy of the orbit. Include bones, boundaries, contents, bony communications, ligaments, muscles, movements and limitations of movement, vasculature and venous communications, innervation and functional components, relationships to surrounding structures, and lymphatic drainage. (12 pts).**

3. A 72 y.o.m. 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 some blurred vision. On exam, you note the distinct smell of tobacco. He has lid lag of the left eye and the exam of the pupil is unequal – the left being smaller than the right. **Discuss the anatomy of the vertebral triangle. Include boundaries, contents, relationships, fascial specializations, vascularization, innervation, lymphatic drainage, and significance. (12 pts)**