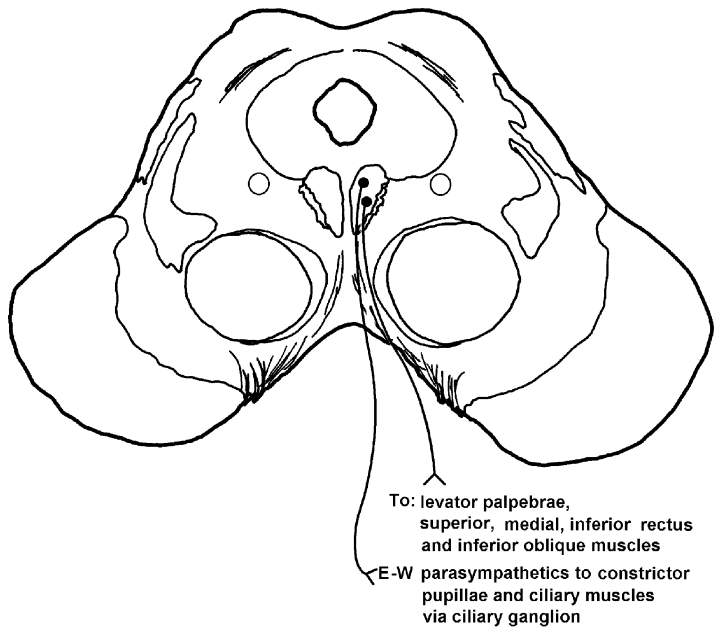
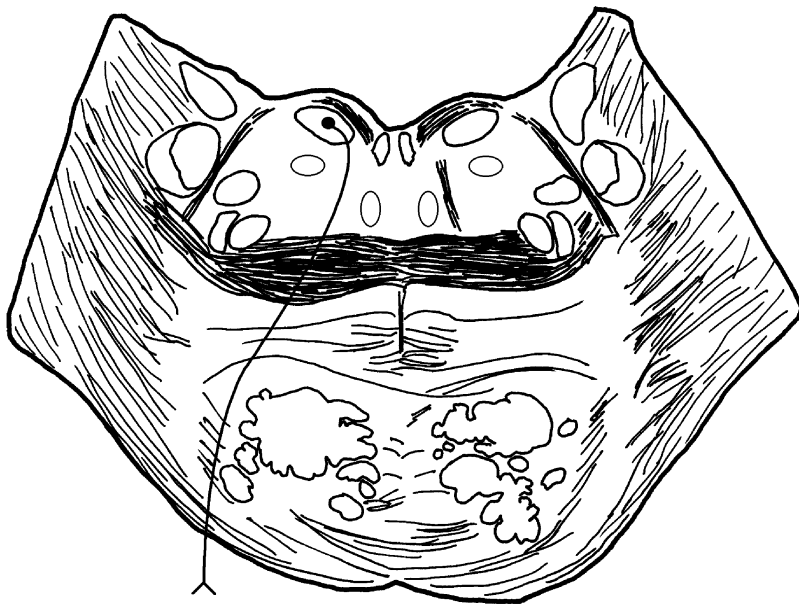
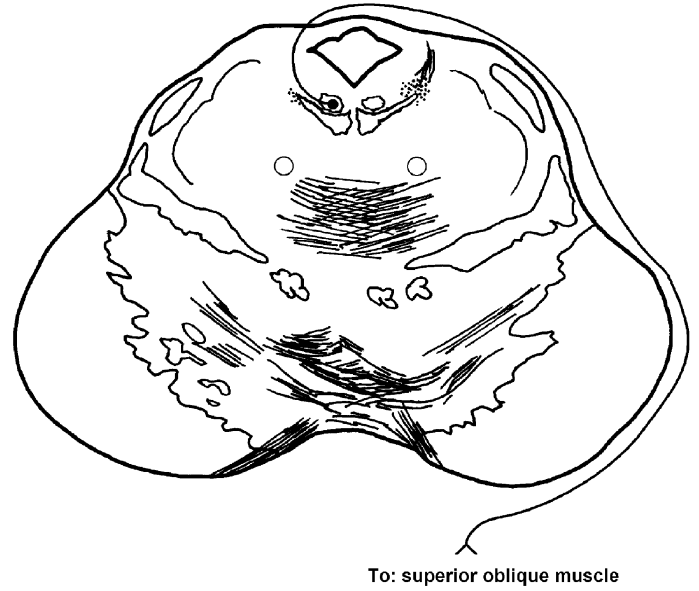


CRANIAL NERVE REVIEW

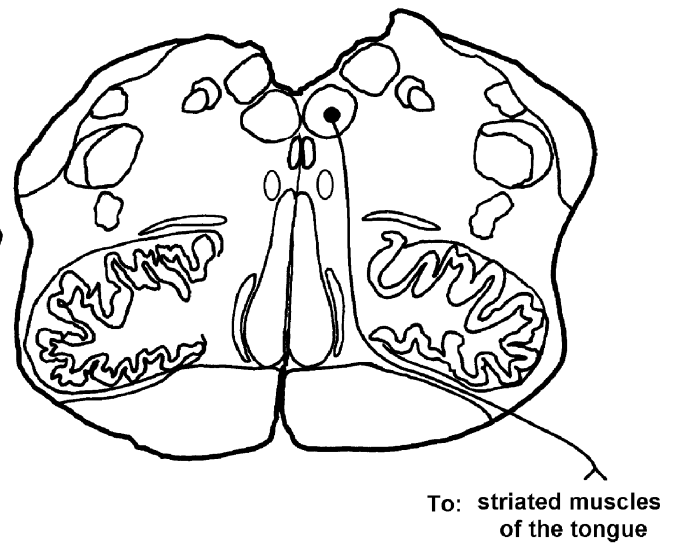
CRANIAL NERVE III



CRANIAL NERVE IV

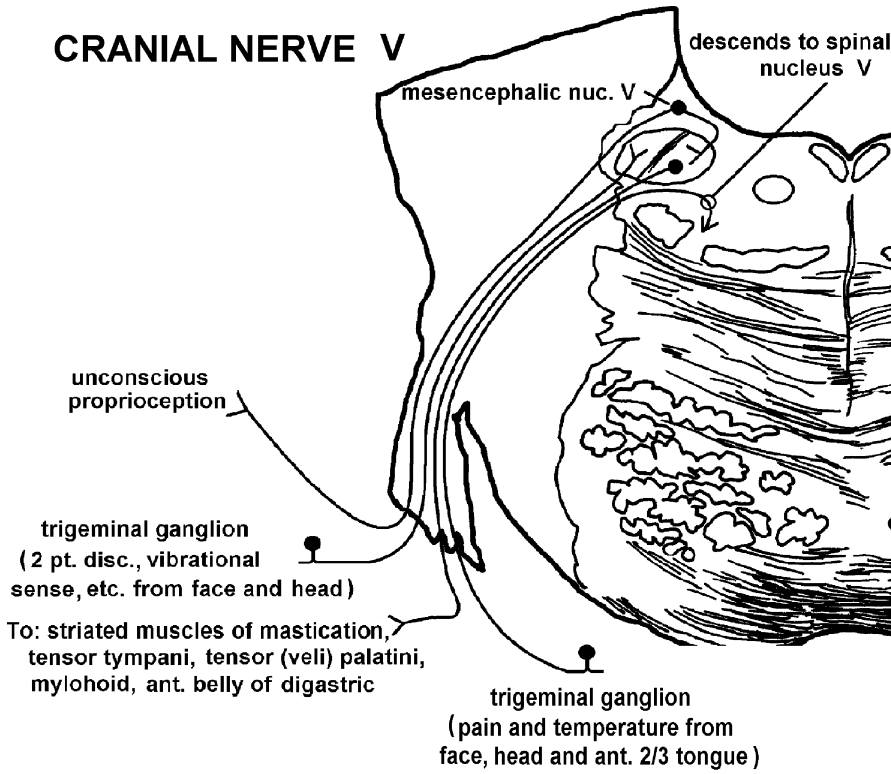


CRANIAL NERVE VI

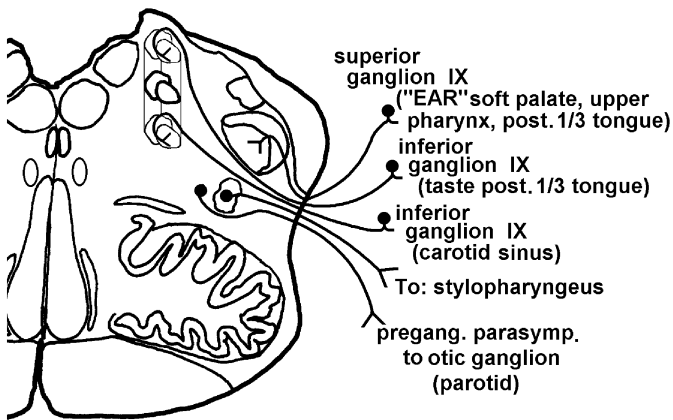
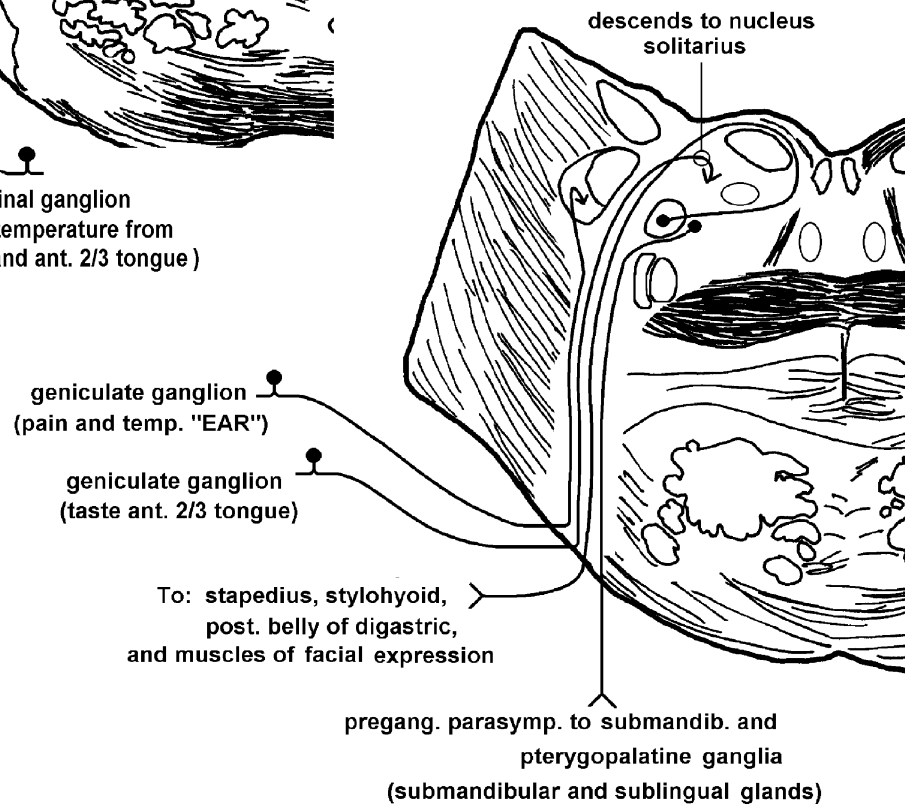


CRANIAL NERVE XII

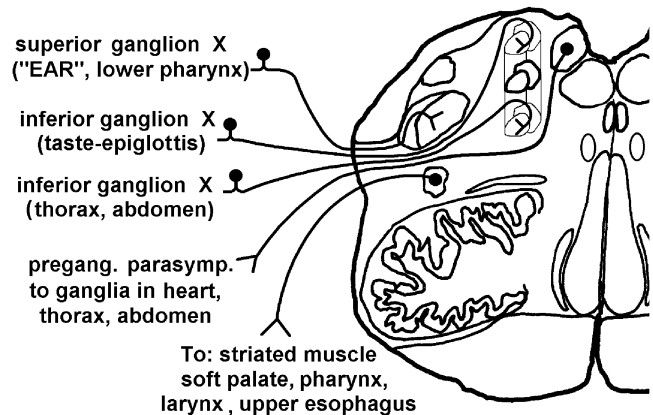
CRANIAL NERVE V



CRANIAL NERVE VII

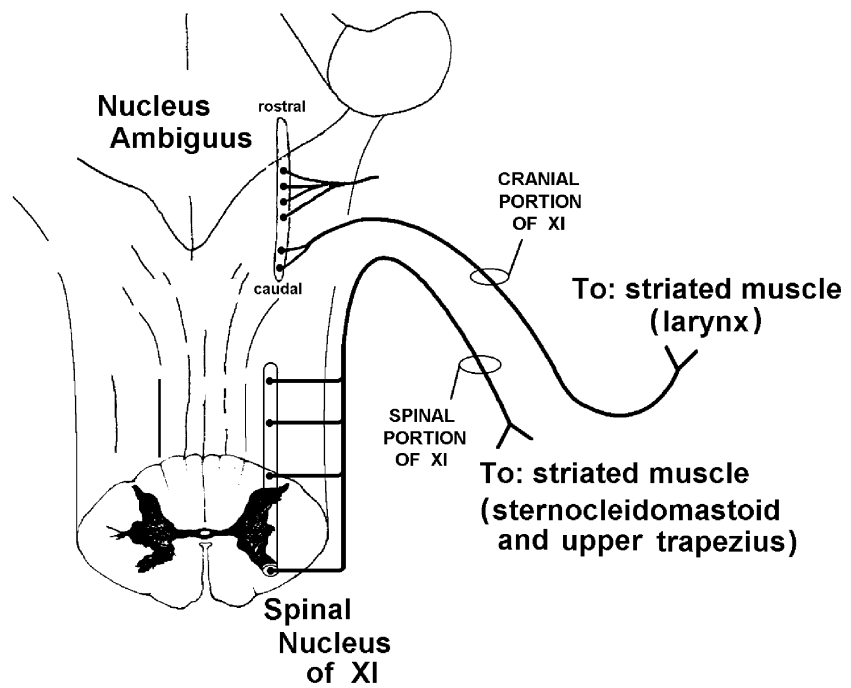
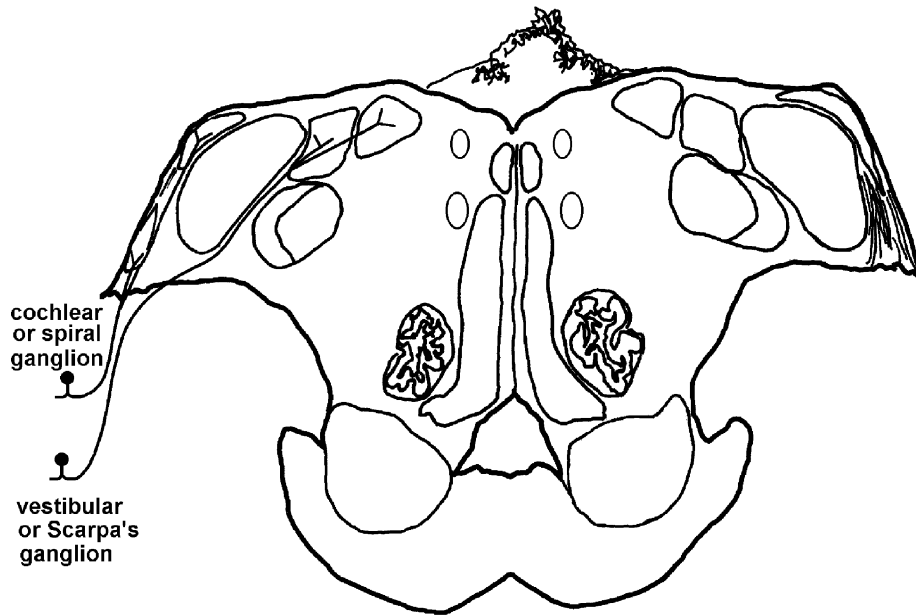


CRANIAL NERVE IX



CRANIAL NERVE X

CRANIAL NERVE VIII



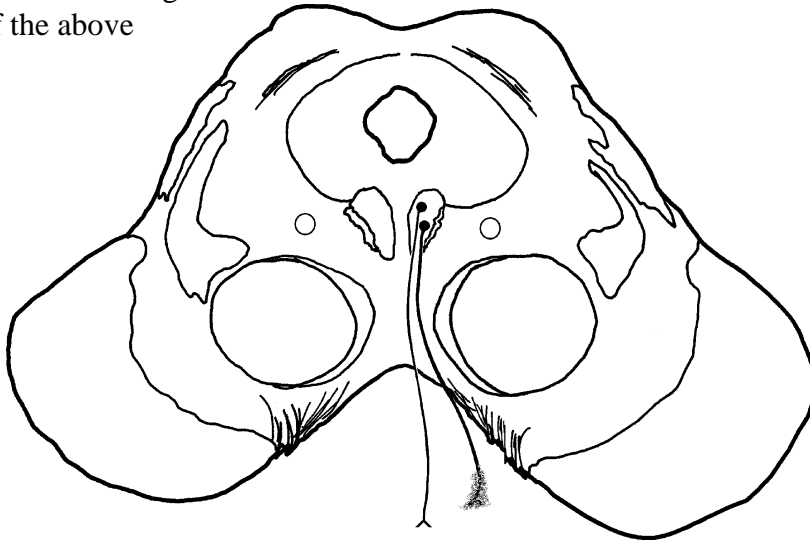
CRANIAL NERVE XI

CRANIAL NERVE PROBLEM SOLVING

Each of the following figures represents the component parts of a single cranial nerve.
PLEASE DO ALL OF THESE AS AT LEAST ONE WILL BE ON THE EXAM!!

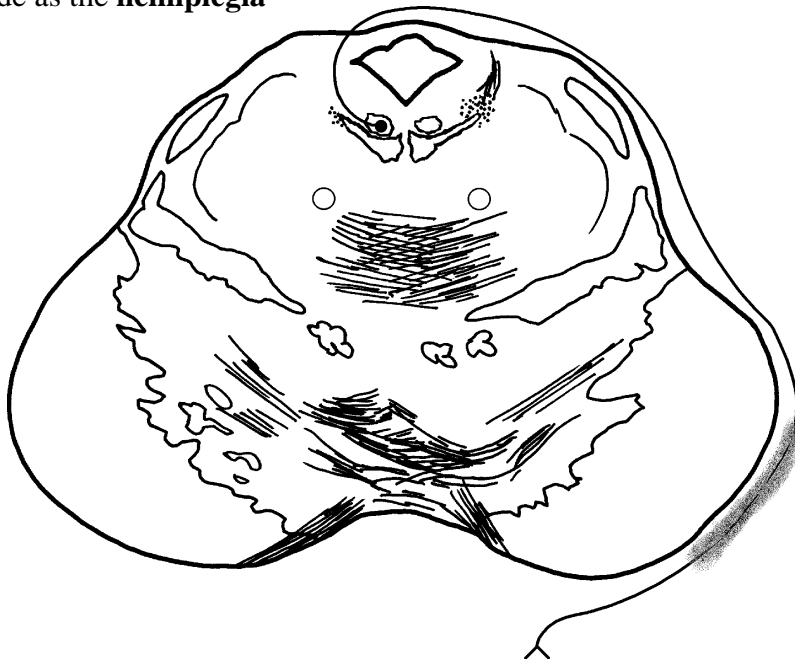
1. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. some axons terminate in the levator palpebrae superioris
- B. some axons terminate in the medial rectus muscle
- C. lesion results in double vision when the ipsilateral (to the lesion) eyelid is raised
- D. axons travel through the cavernous sinus
- E. all of the above



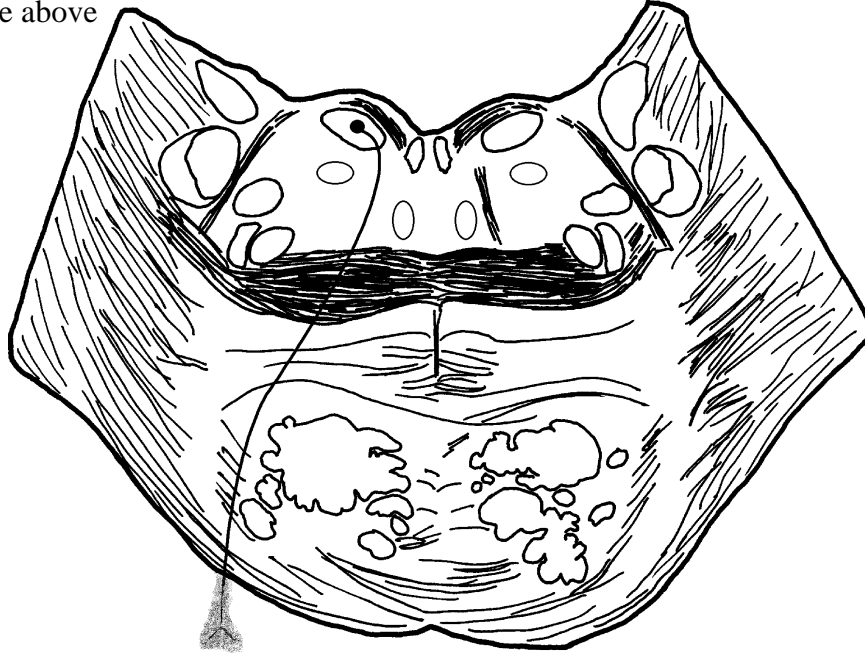
2. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. lesion results in atrophy of the contralateral (to the lesion) superior oblique
- B. axons arise from the ipsilateral abducens nucleus
- C. lesion results in ipsilateral (to the lesion) head tilt
- D. lesion results in ipsilateral head rotation
- E. if lesion were to also invade fiber bundle lying immediately dorsal, head tilt would be to the same side as the **hemiplegia**



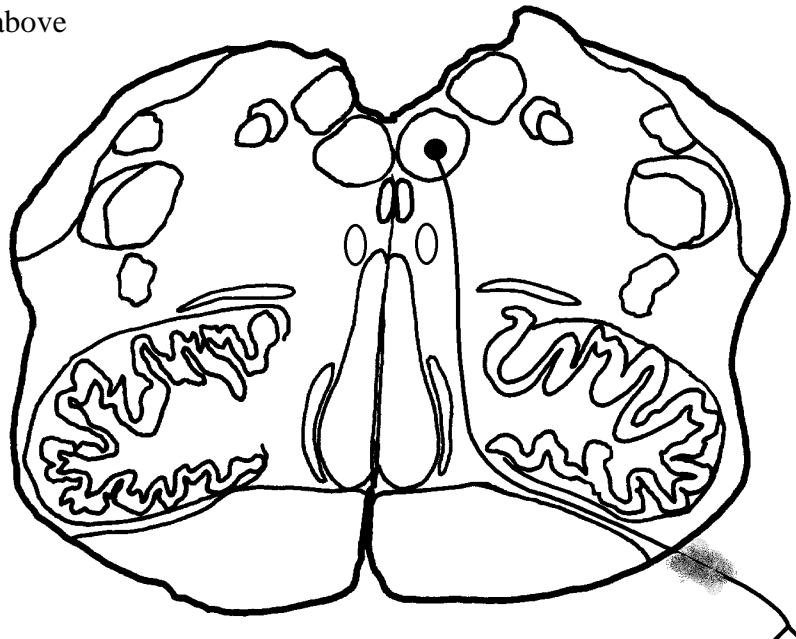
3. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. lesion results in atrophy of the contralateral medial rectus muscle
- B. axon arises from **small** neurons (interneurons i.e. they do not leave the brain) within the ipsilateral abducens nucleus
- C. lesion results in atrophy of the ipsilateral lateral rectus muscle
- D. lesion results in head rotation toward (ipsilaterally) the lesion to ameliorate double vision
- E. two of the above



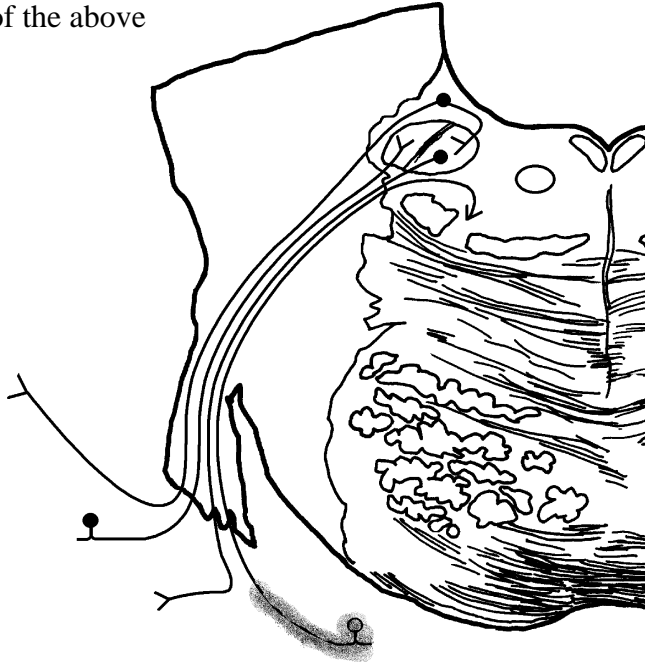
4. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. lesion results in deviation of the tongue to the contralateral side upon tongue protrusion
- B. nucleus associated with nerve receives input from the contralateral motor cortex (corticobulbars!)
- C. lesion results in atrophy of the ipsilateral tongue muscles
- D. nucleus associated with nerve contains lower motor neurons
- E. three of the above



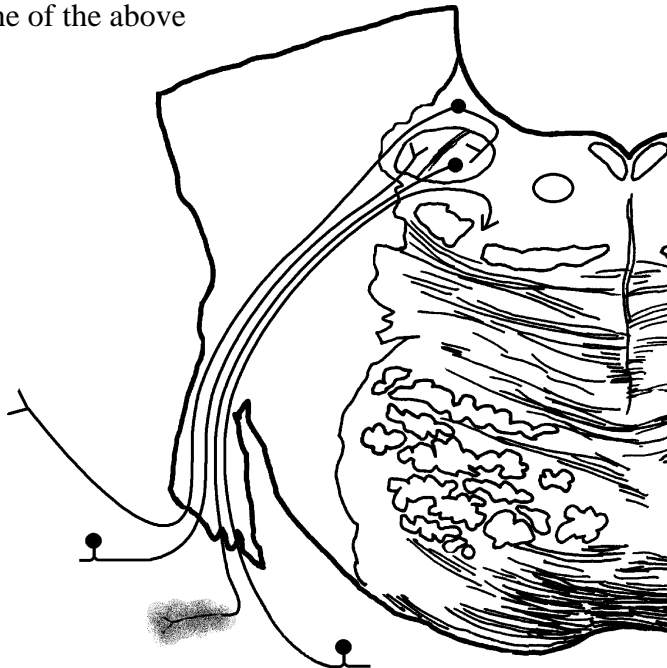
5. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. axon arises in the ipsilateral geniculate ganglion
- B. lesion results in loss of pain and temp. from the ipsilateral side of the body
- C. lesion results in the loss of the direct gag reflex upon stimulation of the contralateral pharynx
- D. axons convey information regarding vibratory sense from the ipsilateral side of the face
- E. none of the above



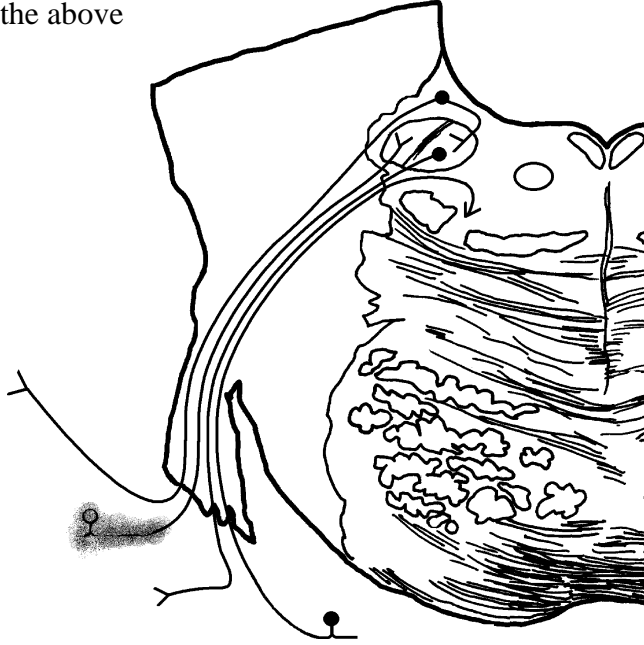
6. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. axon arises from the ipsilateral motor VII
- B. lesion results in ipsilateral deviation of the jaw upon jaw opening
- C. lesion results in contralateral deviation of the jaw upon jaw opening
- D. axon innervates the ipsilateral stapedius muscle
- E. none of the above



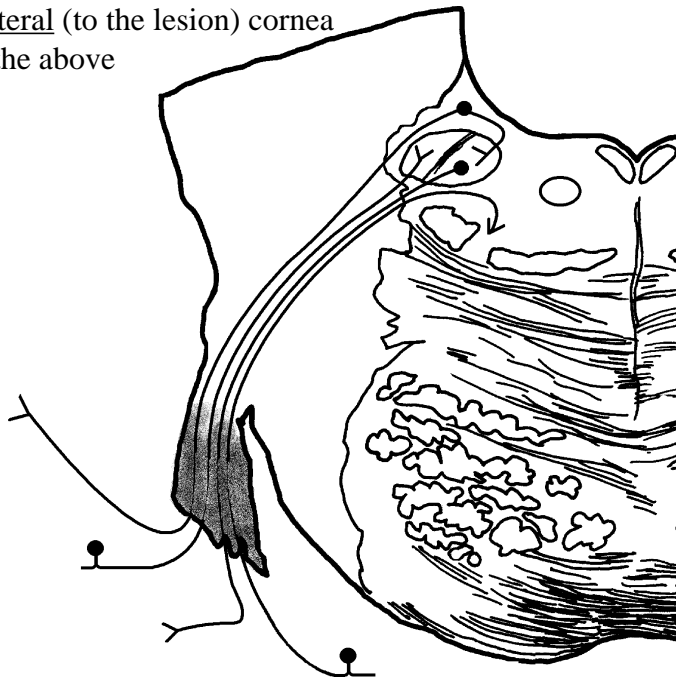
7. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. axon conveys pain and temp. from the ipsilateral side of the face
- B. lesion results in contralateral deviation of the jaw upon jaw opening
- C. lesion results in loss of vibration sense from the ipsilateral side of the face
- D. axon conveys information from Pacinian corpuscles
- E. two of the above



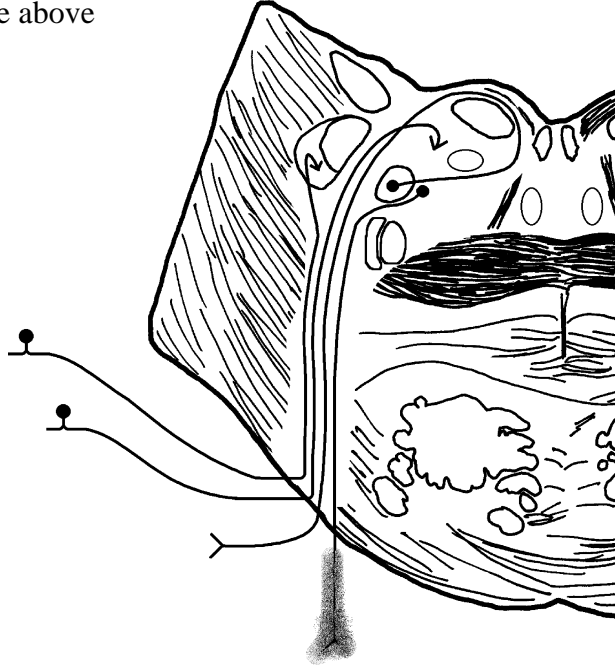
8. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. lesion results in the loss of the direct corneal reflex upon stimulation of the ipsilateral (to the lesion) cornea
- B. lesion results in ipsilateral deviation of the jaw upon jaw opening
- C. lesion results in loss of vibration sense from the contralateral side of the face
- D. lesion results in the loss of the consensual corneal reflex upon stimulation of the contralateral (to the lesion) cornea
- E. two of the above



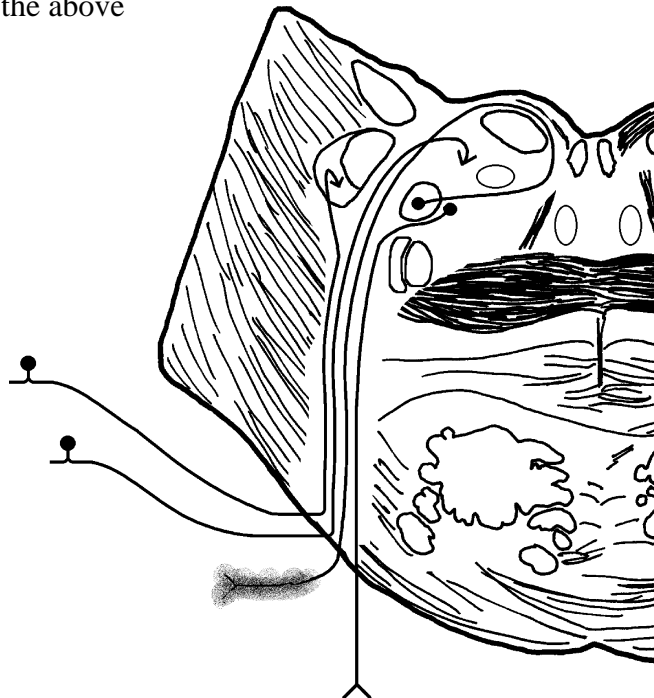
9. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. lesion results in the loss of all salivation
- B. axon arises from inferior salivatory nucleus
- C. axon terminates in the otic ganglion
- D. axon terminates in the lacrimal gland
- E. none of the above



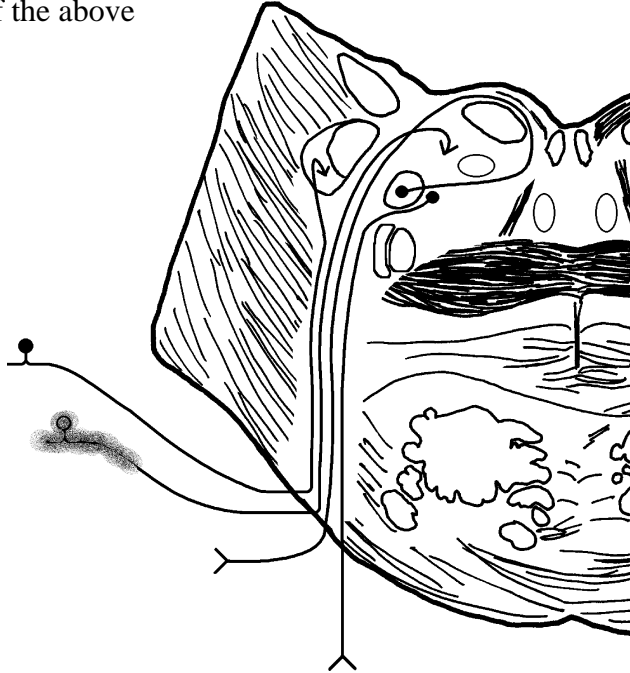
10. Which of the following statements is/are true regarding the shaded area in the drawing below?

- A. dorsal portion of the nucleus associated with this axon receives bilateral corticobulbar input
- B. axons arise from the ipsilateral motor V
- C. axon terminates in the ipsilateral stapedius muscle
- D. lesion results in atrophy of the ipsilateral orbicularis oculi
- E. three of the above



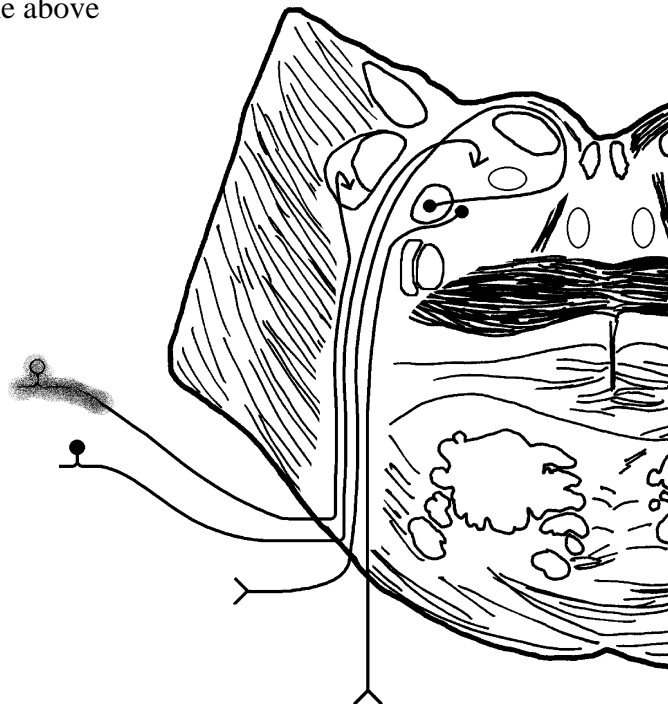
11. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. axons arise from the ipsilateral nucleus solitarius
- B. axon arises from the ipsilateral inferior ganglion VII
- C. axon conveys information about pain and temp. from the anterior two-thirds of the tongue
- D. lesion results in loss of taste from the posterior one-third of the ipsilateral side of the tongue
- E. none of the above



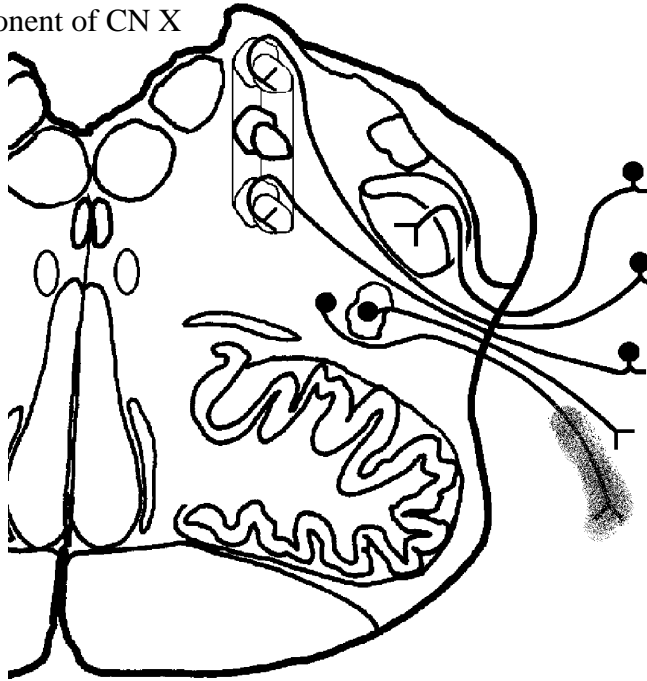
12. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. central portion of axon terminates within the ipsilateral spinal nucleus V
- B. axon arises from the ipsilateral geniculate ganglion
- C. axon conveys information about pain and temp. from the ipsilateral "ear"
- D. region of body innervated by axon shared with other CNs
- E. all of the above



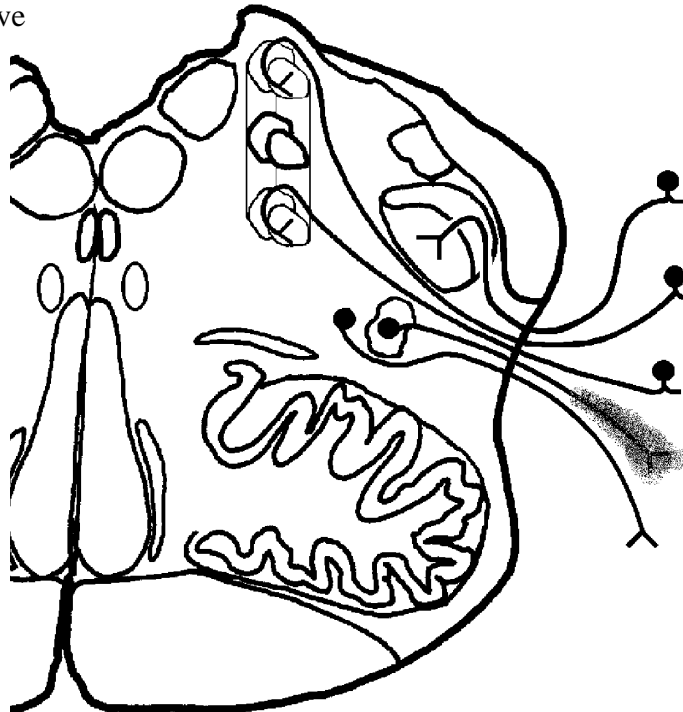
13. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. axon arises from the superior salivatory nucleus
- B. axon arises from nucleus solitarius
- C. lesion results in decrease of salivation
- D. lesion results in atrophy of ipsilateral stylopharyngeus muscle
- E. axon is a component of CN X



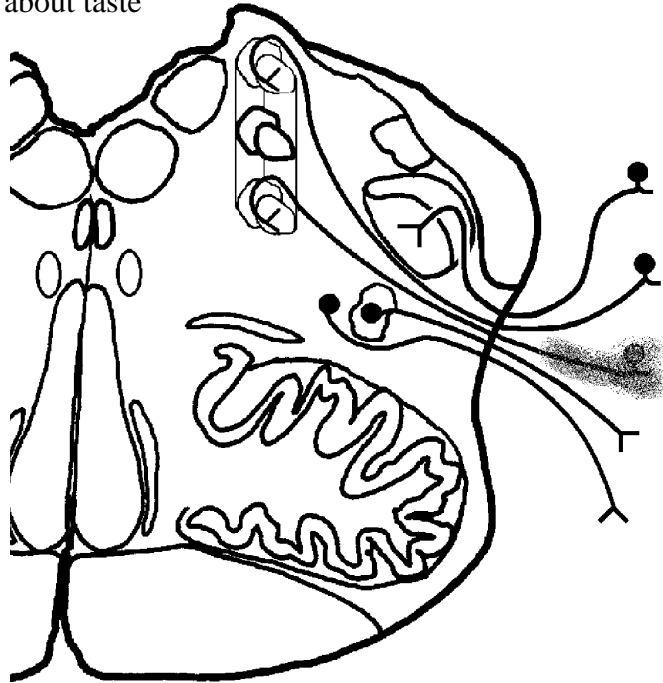
14. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. axon arises in the ipsilateral nucleus ambiguus
- B. axon terminates in the ipsilateral parotid gland
- C. lesion results in diminution of salivation
- D. axon conveys preganglionic parasympathetic information
- E. two of the above



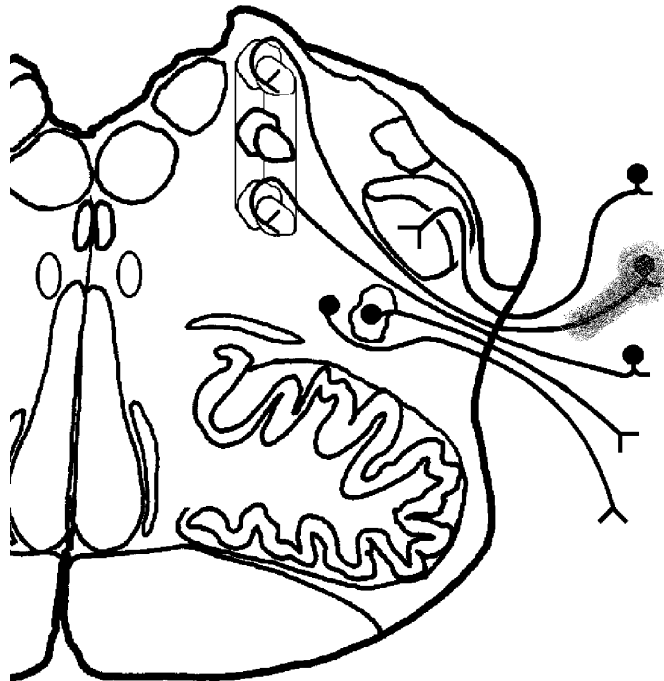
15. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. central process of axon terminates in the caudal portion of dorsal motor X
- B. axon conveys information regarding pain and temp. from the pharynx
- C. axon arises from superior ganglion IX
- D. axon participates in the carotid sinus reflex
- E. axon conveys information about taste



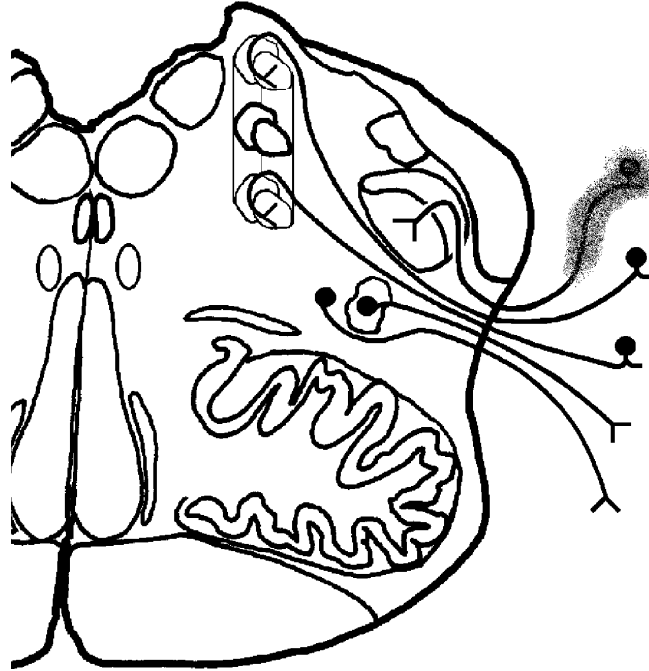
16. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. the central process of the axon terminates in the rostral portion of the solitary nucleus
- B. axon conveys taste information from the anterior one-third of the ipsilateral side of the tongue
- C. axon arises from the superior ganglion IX
- D. following a lesion, stimulation of the ipsilateral (to the lesion) side of the pharynx will result in a consensual gag reflex
- E. two of the above are true



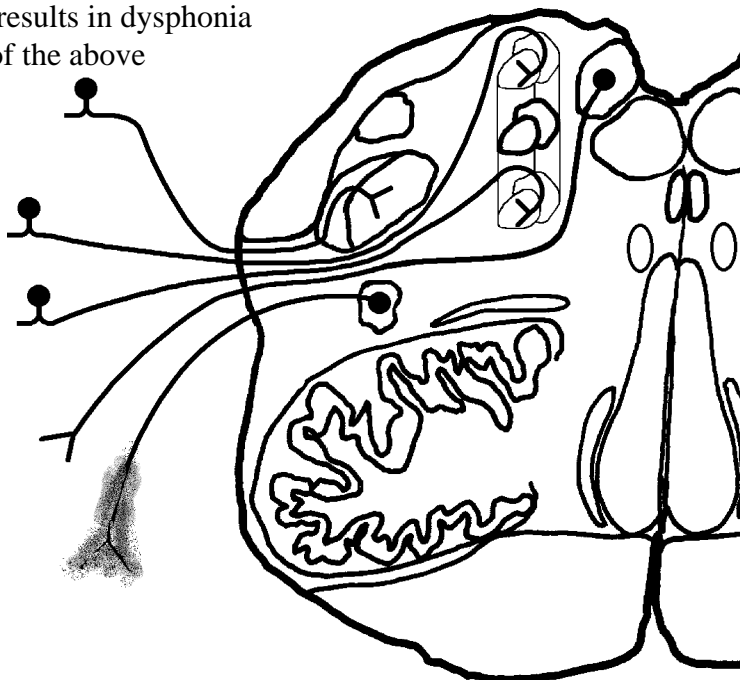
17. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. central process of axon terminates in the ipsilateral caudal spinal nucleus V
- B. axon conveys pain and temp. information from the posterior one-third of the ipsilateral side of the tongue
- C. axon arises from ipsilateral superior ganglion IX
- D. following a lesion, stimulation of the ipsilateral side of the upper pharynx will result in a consensual gag reflex
- E. three of the above



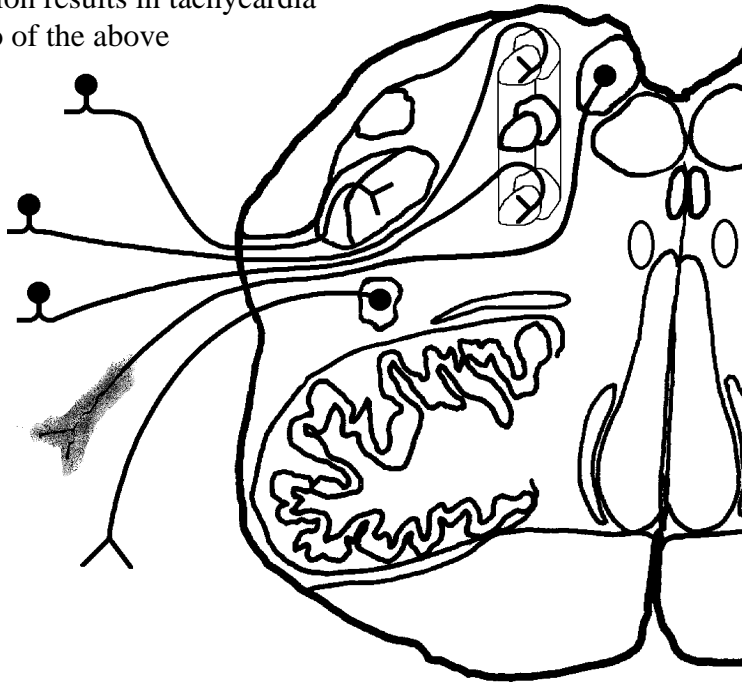
18. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. lesion results in loss of direct gag reflex following stimulation of the ipsilateral lower pharynx
- B. lesion results in loss of consensual gag reflex following stimulation of the ipsilateral lower pharynx
- C. lesion results in dysphagia
- D. lesion results in dysphonia
- E. three of the above



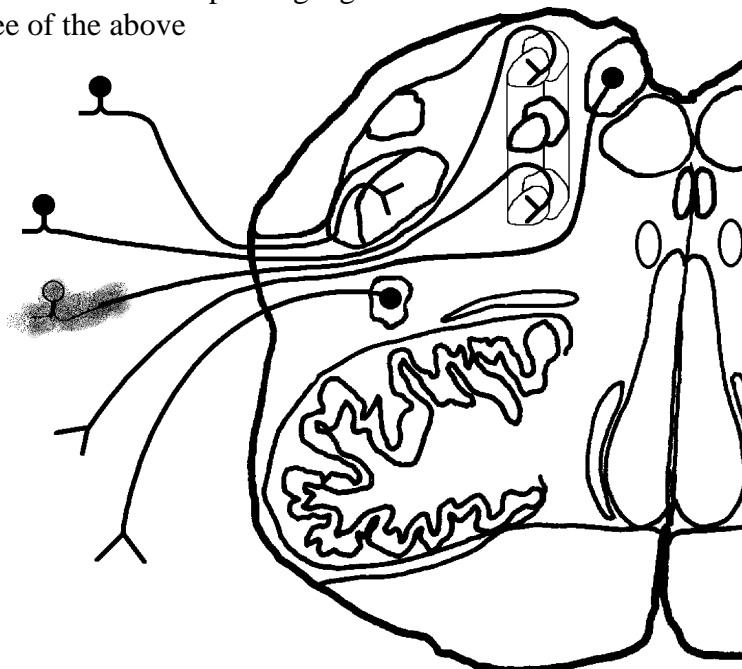
19. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. axon terminates in smooth muscle of the gut
- B. axon is a preganglionic parasympathetic
- C. lesion results bradycardia
- D. lesion results in tachycardia
- E. two of the above



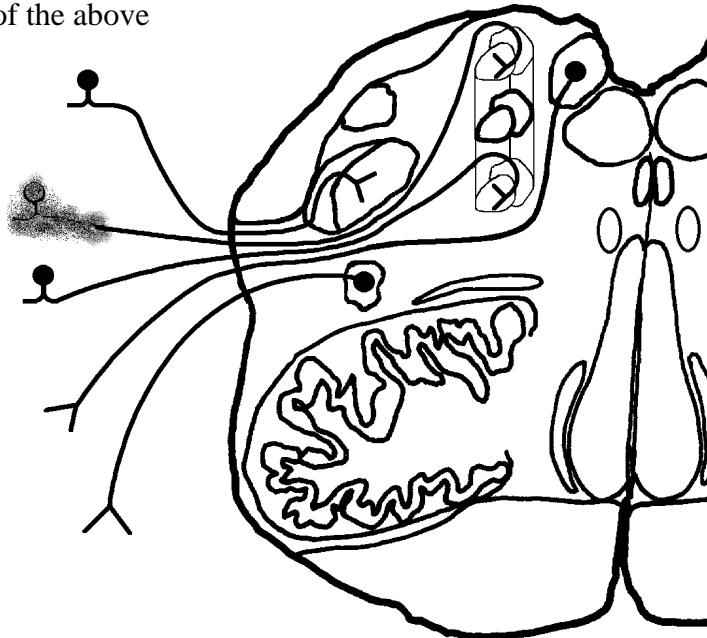
20. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. axon arises from inferior ganglion X
- B. central process of axon terminates within the caudal portion of the ipsilateral nucleus solitarius
- C. axon conveys information about the status of the gut
- D. axon arises from superior ganglion X
- E. three of the above



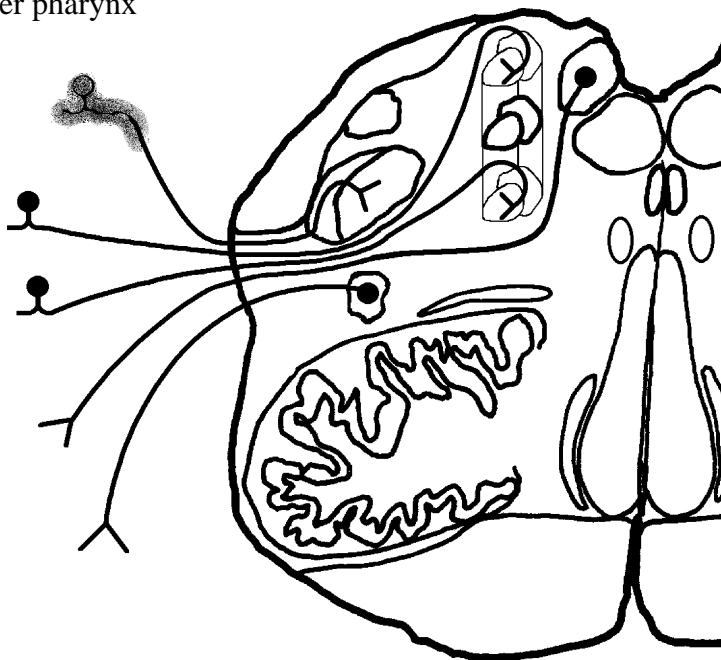
21. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. axon arises from inferior ganglion X
- B. central process of axon terminates within the caudal portion of the ipsilateral nucleus solitarius
- C. peripheral process of axon picks up taste information from the epiglottis
- D. axon conveys pain and temp from the posterior one-third of the tongue
- E. two of the above



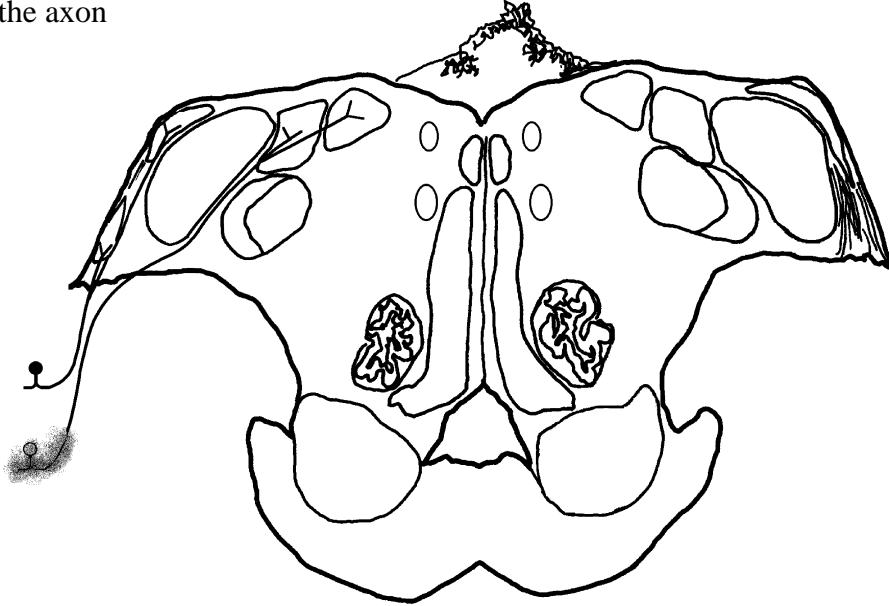
22. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. axon arises from cells in the superior ganglion X
- B. central process of axon terminates within the caudal solitary nucleus
- C. peripheral process of axon picks up taste information from the epiglottis
- D. lesion results in loss of consensual gag reflex following stimulation of the contralateral (to the lesion) lower pharynx
- E. lesion results in loss of direct gag reflex following stimulation of the contralateral (to the lesion) lower pharynx



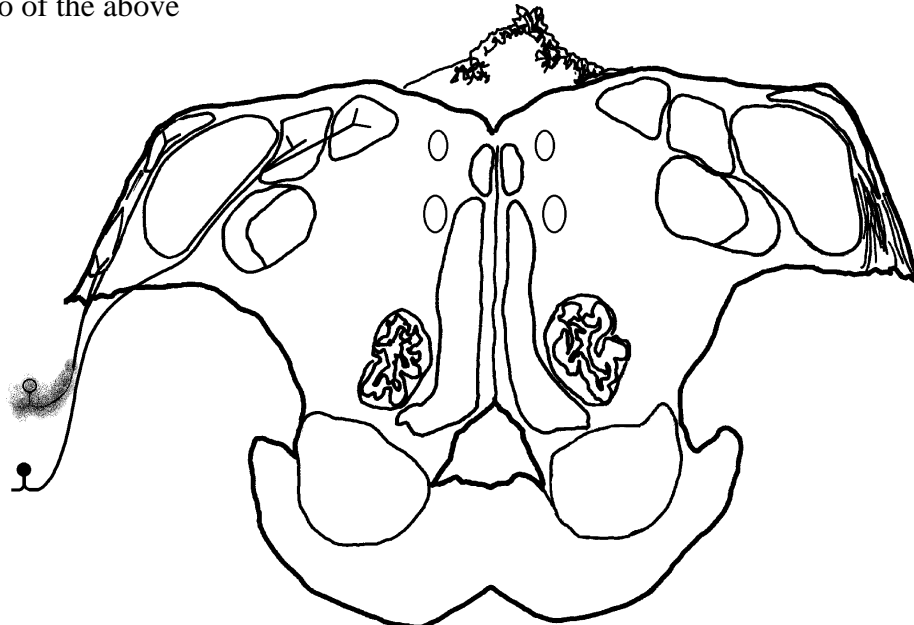
23. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. lesion results in stumbling to the contralateral (to the lesion side)
- B. lesion results in ipsilateral (to the lesion) nystagmus
- C. lesion results in slow phase of nystagmus towards the contralateral side
- D. if axon innervates ipsilateral horizontal semicircular canal, then rotation of the head ipsilaterally will result in a decrease in the number of action potentials carried by the axon (the axon identified is O K i.e. normal)
- E. if axon (again, it is O K) innervates ipsilateral horizontal semicircular canal, then rotation of the head ipsilaterally will result in an increase in the number of action potentials carried by the axon



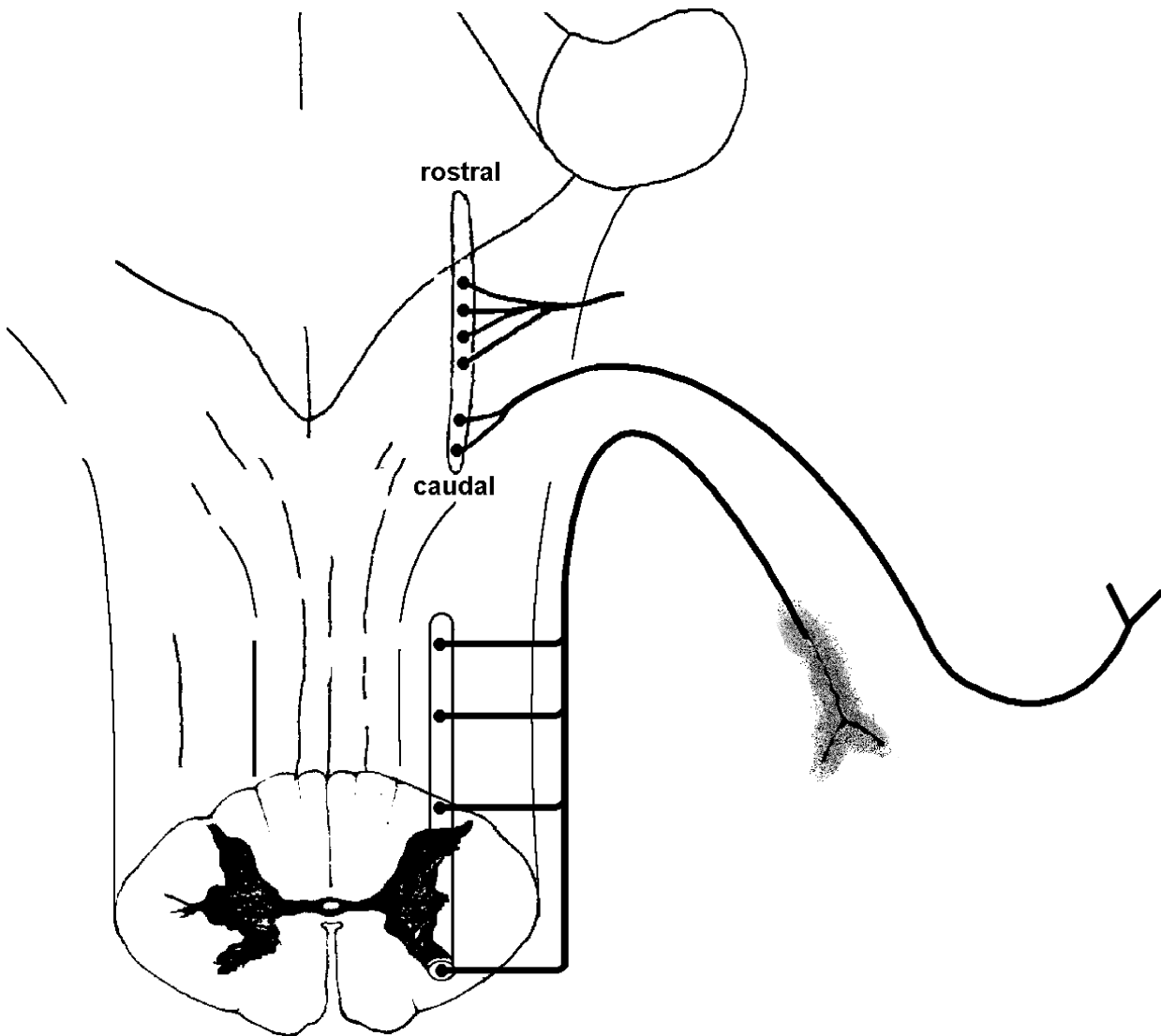
24. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. irritation can result in tinnitus (ringing in ear) in the ipsilateral ear
- B. lesion results in deafness in the ipsilateral ear
- C. peripheral part of axon innervates hair cells in ipsilateral semicircular canal
- D. central process of axon terminates in the contralateral superior olive
- E. two of the above



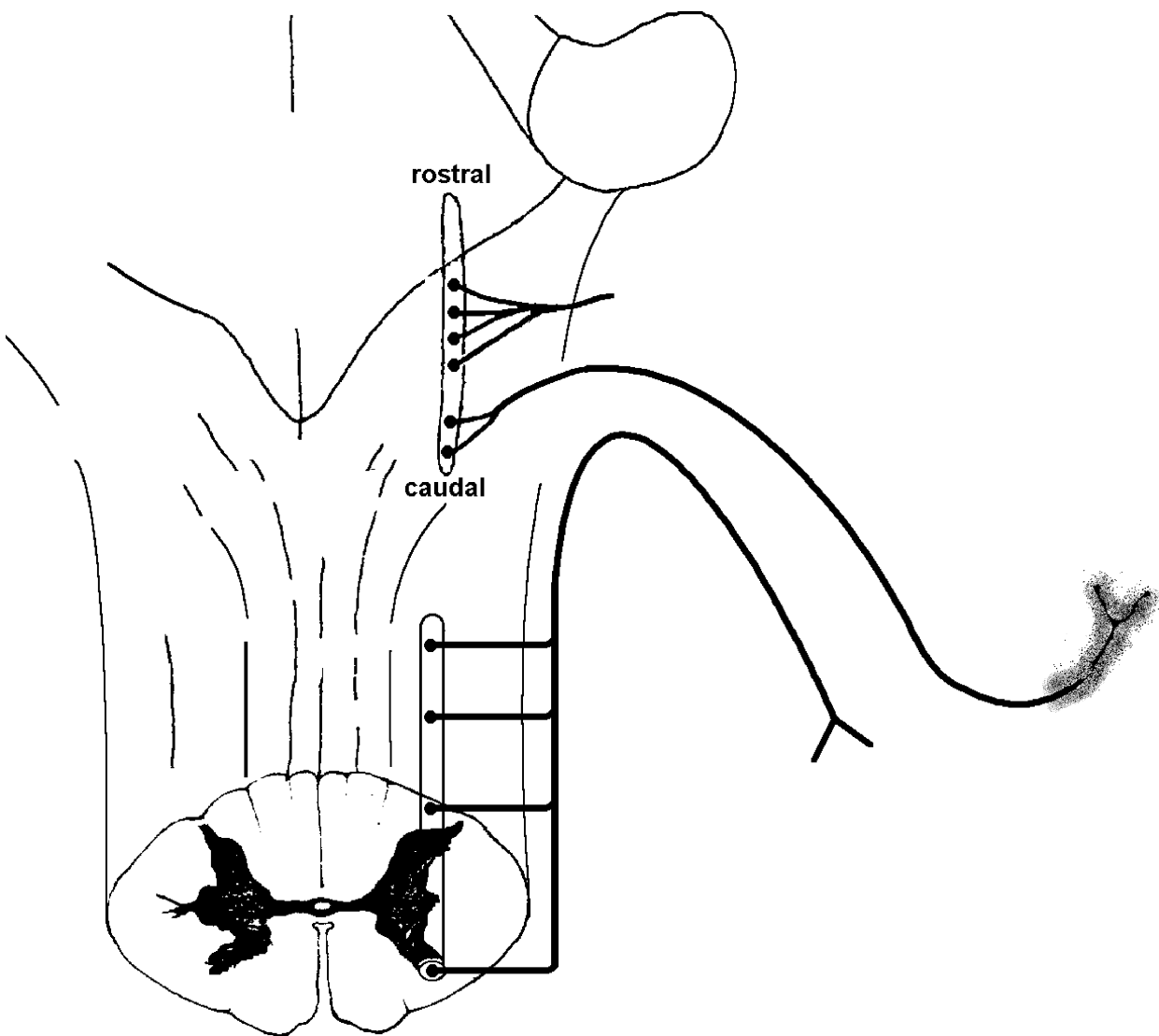
25. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. lesion results in chin rotated contralateral to the lesion
- B. lesion results in drooping of the contralateral shoulder
- C. axon is part of CN X
- D. lesion results in atrophy of the contralateral sternocleidomastoid (remember that this muscle rotates your head contralaterally)
- E. lesion results in chin rotated towards the lesion



26. Which of the following statements is/are **true** regarding the shaded area in the drawing below?

- A. lesion results chin rotated ipsilateral to the lesion
- B. axon arises from caudal part of ipsilateral nucleus ambiguus
- C. axon is part of CN XI
- D. lesion results in drooping of the ipsilateral shoulder
- E. two of the above



PROBLEM SOLVING ANSWERS

27. Unilateral destruction of **any** of the following structures could present with unilateral ptosis, **except:**

- A. third nerve
- B. oculomotor nucleus (include EW)
- C. sympathetic axons in the cavernous sinus
- D. abducens nucleus
- E. cervical spinal cord

SEE ANSWER BELOW

28. The principal site at which integration of sensory information regarding the cardiovascular and respiratory systems is located in the:

- A. nucleus ambiguus
- B. hypoglossal nucleus
- C. nucleus solitarius
- D dorsal I guess solitary motor nucleus
- E. motor VII

CRANIAL NERVE PROBLEM SOLVING ANSWERS

- | | |
|-------------------|-------------------|
| 1. E-All | 14. A |
| 2. E | 15. D |
| 3. E-(C and D) | 16. E-(A, and D) |
| 4. E-(B,C and D) | 17. E-(A,B and C) |
| 5. E-none | 18. E-(A,C and D) |
| 6. B | 19. E-(B and D) |
| 7. E-(C and D) | 20. E-(A,B and C) |
| 8. E-(A and B) | 21. E-(A and C) |
| 9. E-none | 22. A |
| 10. E-(A,C and D) | 23. E |
| 11. E-none | 24. E-(A and B) |
| 12. E-All | 25. E |
| 13. C | 26. E-(B and C) |

27. Lesions of oculomotor nucleus and nerve result in a ptosis due to the atrophy of the levator palpebrae muscle. The descending hypothalamic fibers destined for the sympathetic outflow from T1-L2 can be interrupted at C1 and results in Horner's syndrome=constricted pupil, ptosis (miosis), and anhidrosis (absence of sweating). The postganglionic sympathetics from the superior cervical ganglion destined for the eye can be interrupted in the cavernous sinus and result in a Horner's. The abducens? Huh! The answer is D

28. This makes sense even though it was not stressed in the course book. (I found this question on a Neurology Boards www site). Certainly we never think of ambiguous as much of a "thinker" or "cognitive" type. Ambiguous' self image="I move da muscle". Same for hypoglossal. Now, solitarius must be a bit of a thinker as it gets some interesting inputs about us and does not project to muscle but rather to other integrative areas like dorsal motor X and T1=L2. I'd rate solitarius more integrative than dorsal motor X but it is close. Motor VII is ambiguous' twin, born in those gill arches long ago. So, the answer according to the Neurology Boards www site=C.