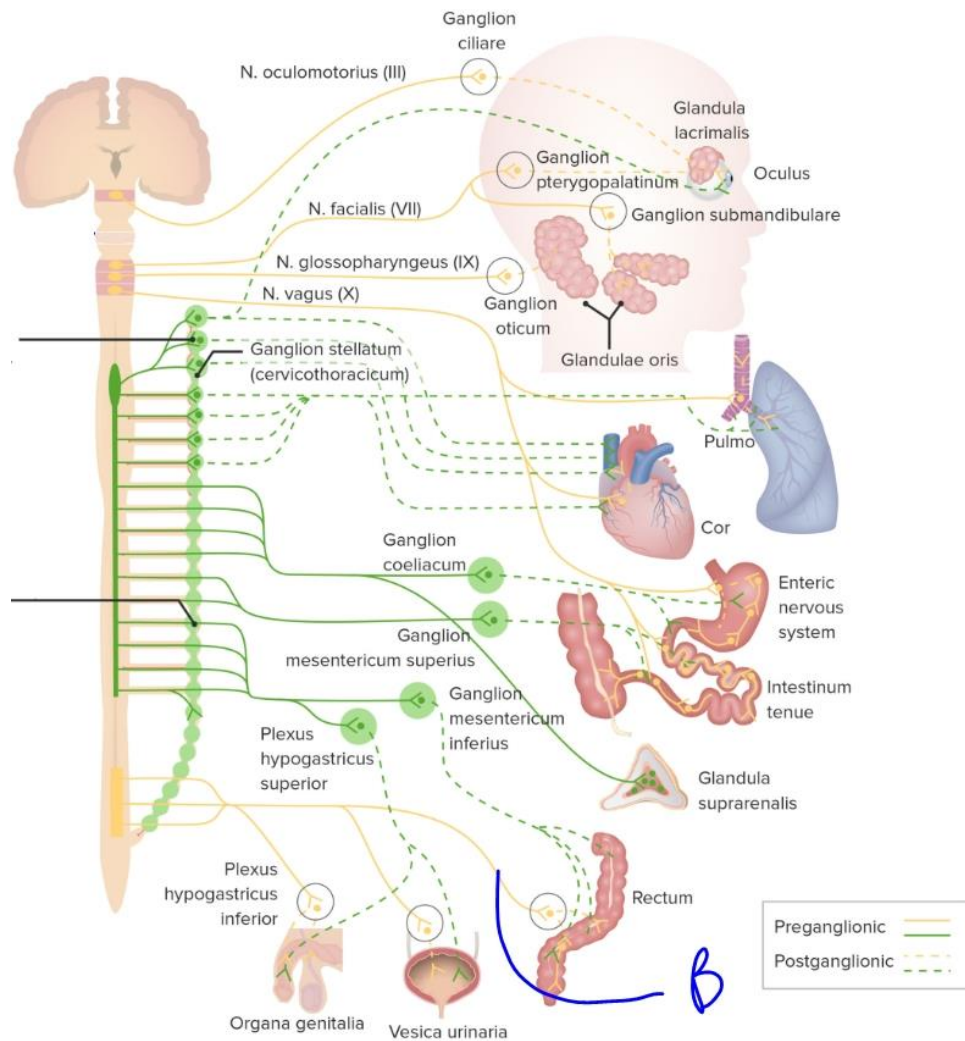# Test 4 (Chapters 12-15)

*In writing my name below, I agree not to give or receive unauthorized help.*

Name: _____

## Part I: Short Answer [15 questions @ 6 points each = 90 points total]

1. Is the pathway marked with the letter B a somatic pathway, sympathetic pathway, or parasympathetic pathway? Explain your reasoning.
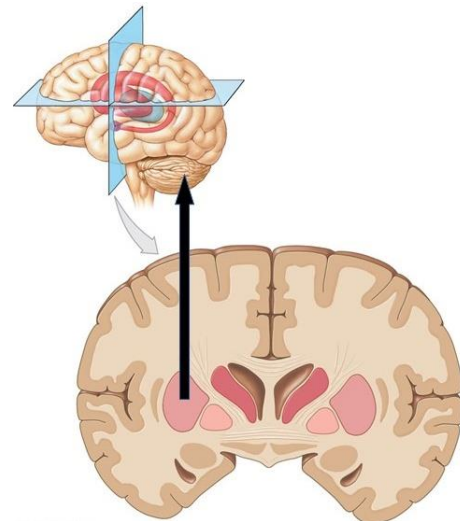
[based on TQT 14.3.2]

2. Looking at the diagram at right, identify what number 2 is.  What is its name? Then tell me what the consequences would be if damage were to occur there.
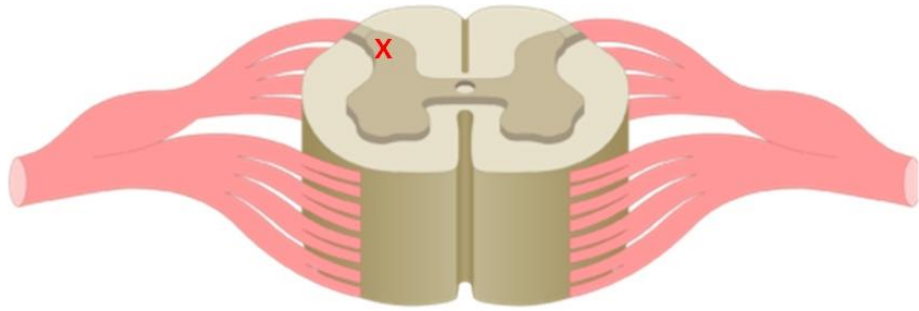
[based on TQT 12.4.3]
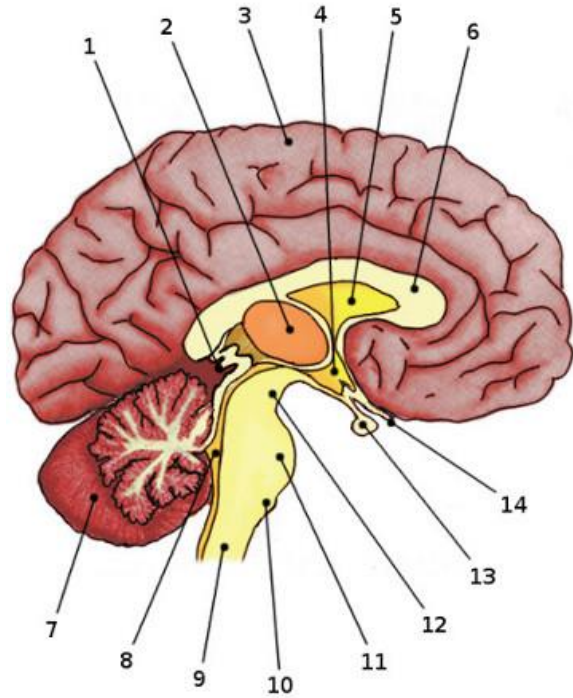


3. The thick black arrow represents neurons connecting the brain areas shown. Based on where these neurons start and end, predict their function. Explain your reasoning.
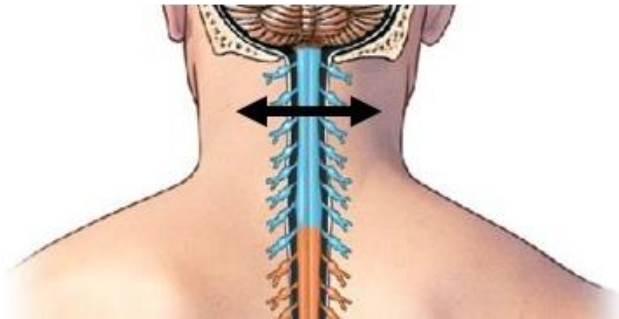
[based on TQT 12.4.4]

4. What problems would result if spinal cord section T$_4$ suffers damage to the area marked at right with a red X? Be as specific as you can; explain your reasoning.



[based on TQT 12.2.2]

5. A person suffers a horrible injury in which a sharp object slices all the way through the spinal cord as indicated with the black arrow at right. Assuming that this person survives the accident, are they likely to be paraplegic, quadriplegic, or in some other state? Explain your reasoning.
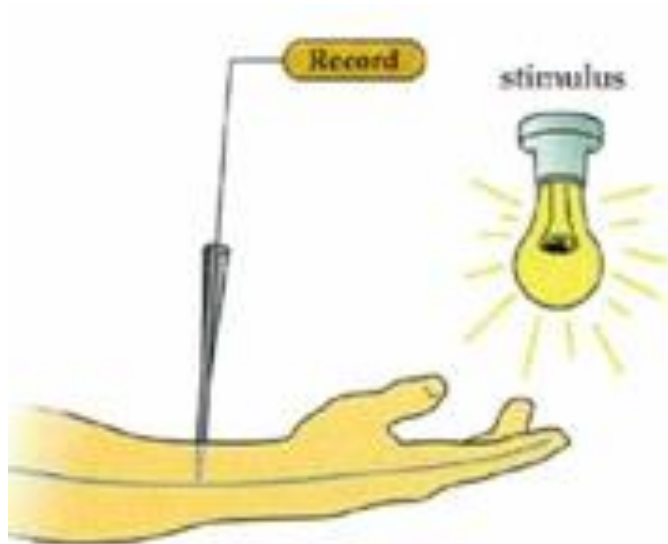


[based on TQT 12.2.2]

6. At right is a diagram of a reflex. (A) Is this reflex cranial or spinal? (B) Is this reflex visceral or somatic? Briefly explain each choice.

[based on TQT 13.6.1]
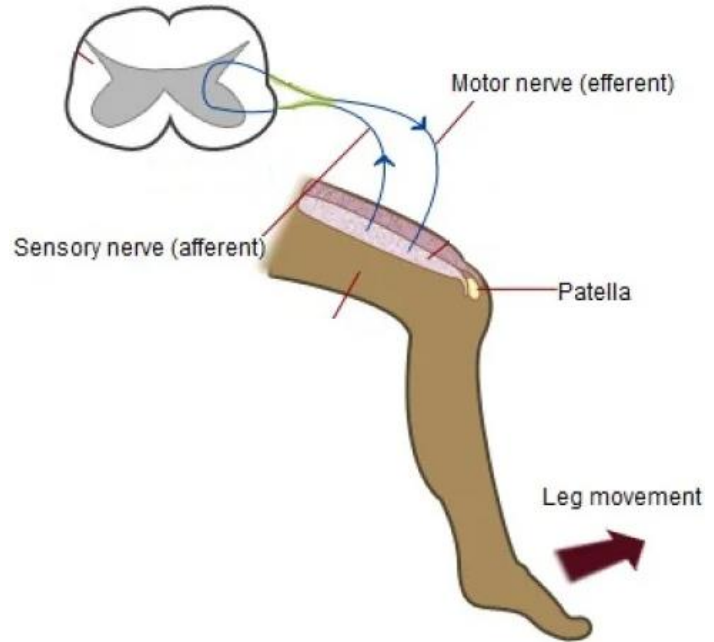


7. When a light bulb is turned on near the hand, there is a response from the blue/green cell at right (which has recordable electrical activity in the form of action potentials, as shown). Classify this cell as (A) an exteroceptor, interoceptor or proprioceptor, and as (B) a photoreceptor or a thermoreceptor. Justify each choice in a few words.

[based on TQT 15.1.1]

8. At right is a picture that includes some light-brown/beige hair cells, which are sensory receptors. What kinds of receptors are these hair cells: (A) neurons, or (B) non-neurons? Explain your reasoning.
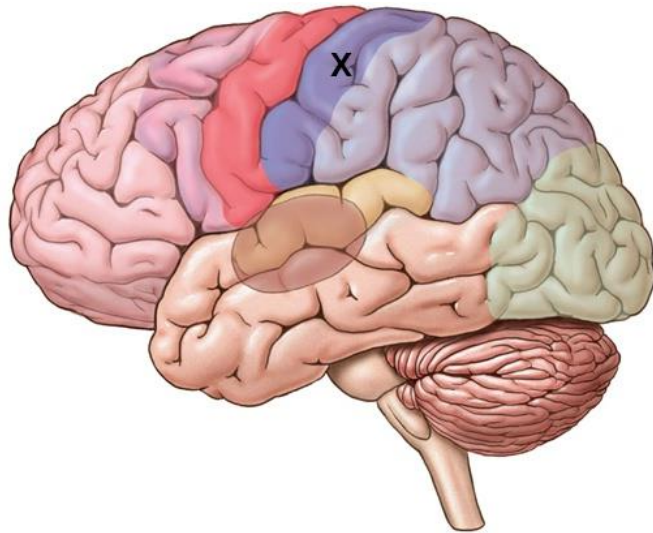
[based on TQT 15.1.1]



**Cochlea Cross Section**
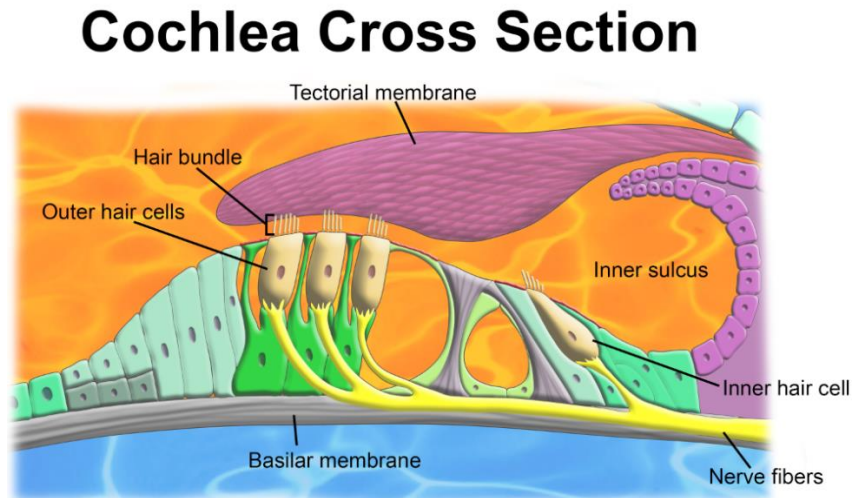
9. At right is a diagram of a reflex whose effector is controlled by the autonomic nervous system. A bright green circle marks the spot where a motor neuron releases neurotransmitter to the effector. Which neurotransmitter – acetylcholine or norepinephrine – is released at that spot? Explain your reasoning.

[based on TQT 14.3.4]



**Pupil Reflex Pathway**
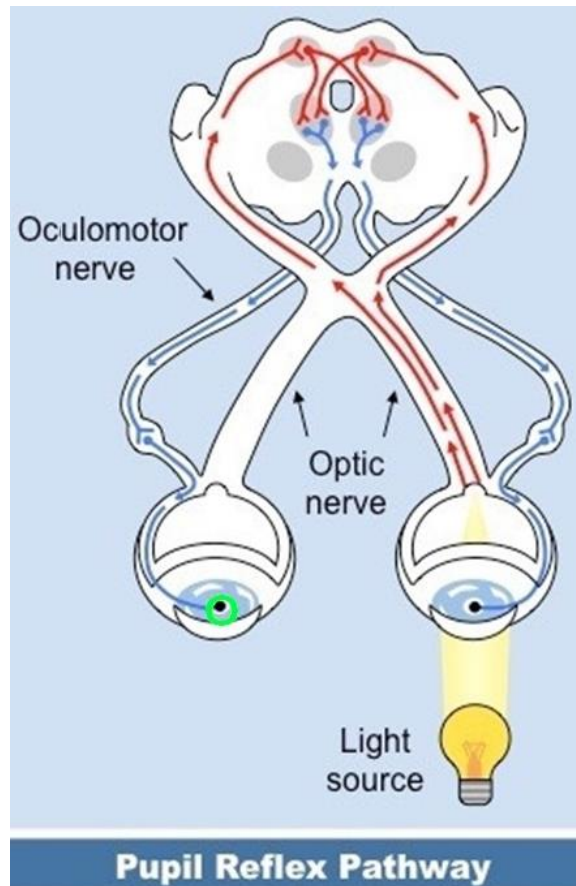
10. Neurons at location X (blue in the figure) are highly active. What is going on? That is, is location X receiving <u>sensory</u> information or sending out <u>motor</u> commands, AND which side of the body (left or right) is this information coming from or going to? Explain your reasoning for both choices.
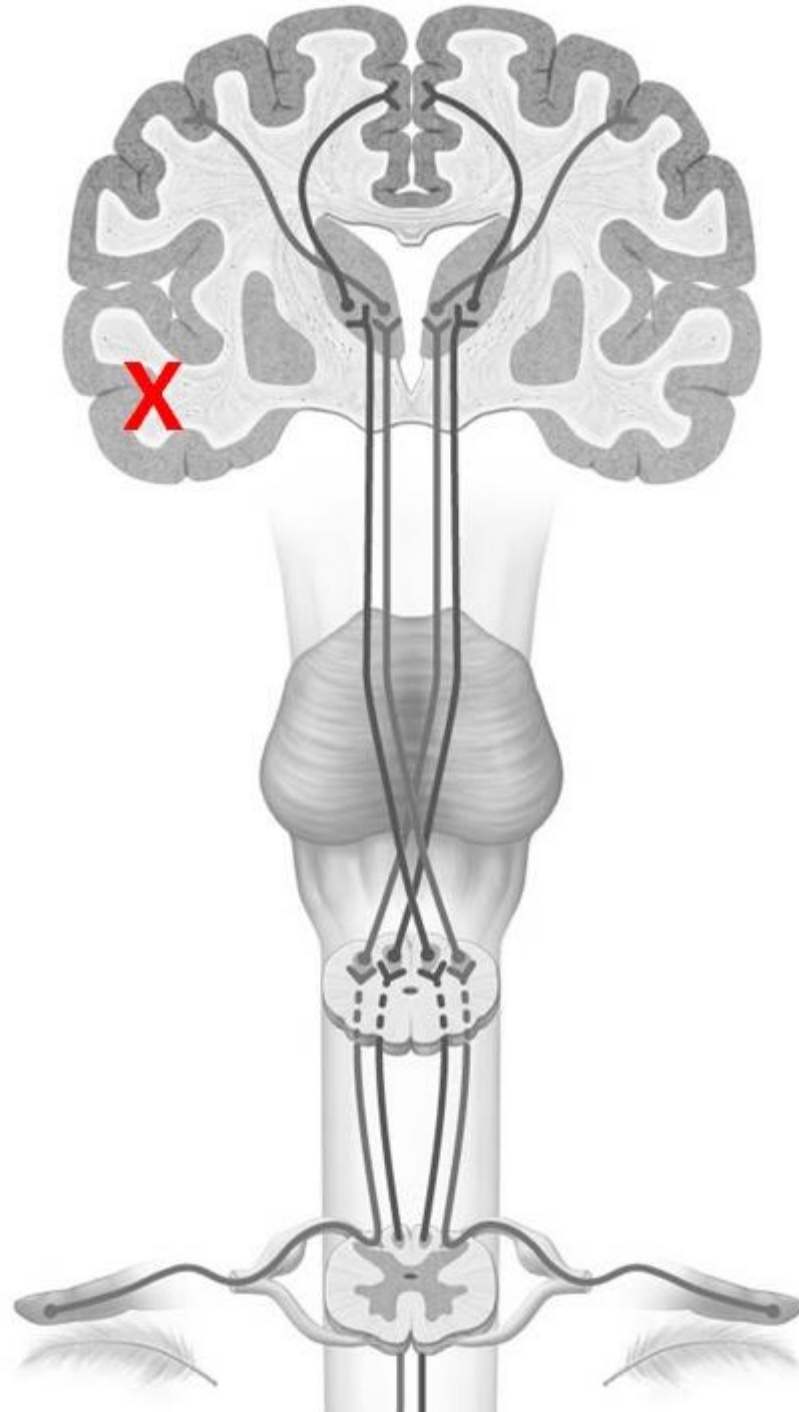
[based on TQT 12.4.6]

11. Is the pathway at right (running between the precentral gyrus of the brain and the spinal cord) a sensory pathway, a somatic motor pathway, a sympathetic pathway, or a parasympathetic pathway? Explain your reasoning.
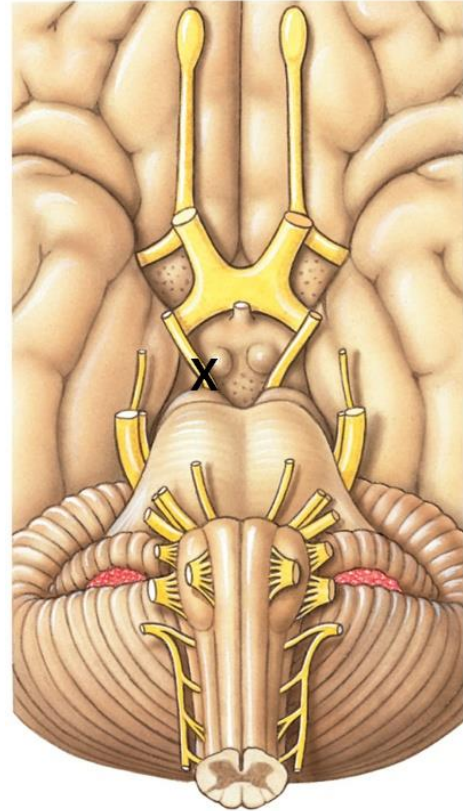
[based on TQT 15.4.5]
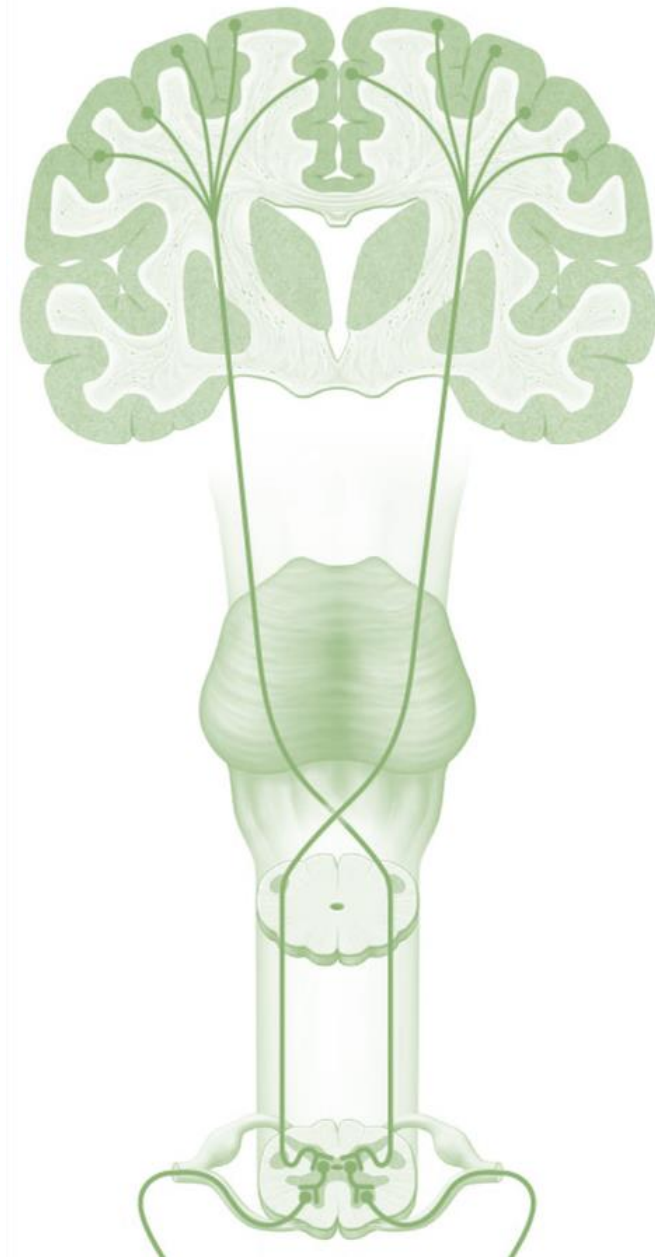
12. Assume there is extensive damage at the location marked at right with a red X. What functional problems (sensory, motor, and/or other) would you predict? Explain your reasoning.

[based on TQT 12.4.3]

13. Assume that damage has occurred to a cranial nerve as marked at right with a black X. What functional problems (sensory, motor, and/or other) would you predict? Explain your reasoning.

[based on TQT 13.3.3]



14. Within the ear, there is damage to a person's tympanic membrane. Would this result in conductive hearing loss, sensorineural hearing loss, or neither? Explain your reasoning.

[based on TQT 15.4.4]

15. A stroke causes severe damage to the optic chiasm. Predict what kinds of visual deficits, if any, will result. That is, will there be a problem with information from the left eye and/or right eye? Will there be a problem with information from the left side of environment and/or the right side of the environment? Explain your reasoning.

[based on TQT 15.4.3]