

# Copy of Exam 2 for printing - Results

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## Attempt 1 of 2

Written Feb 28, 2024 10:10 AM - Feb 28, 2024 10:10 AM

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Attempt Score 0 / 50 - 0 %

### Question 1 0 / 1 point

real-time processing and correction of body movement is enabled by communication between the somatosensory and motor areas of the cortex and the

- corpus callosum
- midbrain
- Broca's area
- hindbrain
- basal nuclei

### Question 2 0 / 1 point

The cranial nerves of the embryonic pharyngeal arches are

- Pharyngeal N of the Maxillary, Pharyngeal N of the Vagus
- Trigeminal, Facial, Glossopharyngeal, Vagus
- Accessory, Hypoglossal
- Ophthalmic, Maxillary, Mandibular branches of the Trigeminal
- Oculomotor, Trochlear, Abducens nerves

### Question 3

0 / 1 point

The protein that directly inhibits myosin heads from binding to actin in a relaxed muscle is

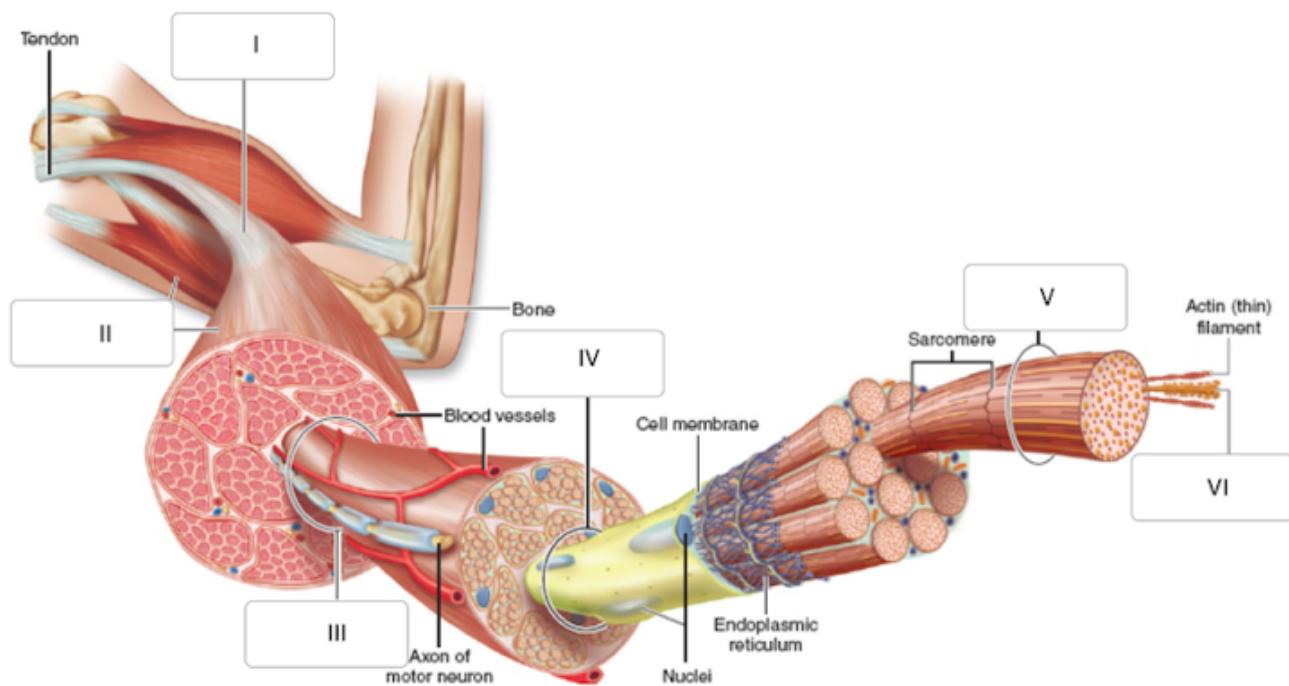
- tropomyosin
- thick filaments
- collagen
- thin filaments
- troponin

### Question 4

0 / 1 point

a motor neuron and all of the muscle fibers it innervates is a

- muscle fascicle
- myofibril
- sarcolemma
- motor unit
- sarcomere

**Question 5****0 / 1 point**

In the image above, the structure labeled "II" is a

- thick filament
- muscle
- myofibril
- tendon
- fiber

**Question 6****0 / 1 point**

For a membrane to initiate an action potential, what is necessary?

- Ca++ pumps
- ligand-gated Na+ channels
- voltage-gated Na+ channels
- voltage-gated K+ channels
- ligand-gated K+ channels

**Question 7****0 / 1 point**

Motor neurons signal skeletal muscle cells to contract. In this signaling, what causes vesicles in the terminal button of the motor neuron to translocate to and fuse with the pre-synaptic membrane?

- a conformational change in tropomyosin
- Ca<sup>++</sup> binding to troponin
- high Ca<sup>++</sup> levels in the cytosol of the terminal button
- conductance of the action potential along the t-tubule
- acetylcholine

**Question 8****0 / 1 point**

Dendrites have a high density of

- Na<sup>+</sup> and K<sup>+</sup> leak channels
- Ca<sup>++</sup> leak channels
- ligand-gated ion channels
- voltage-gated Ca<sup>++</sup> channels
- voltage-gated Na<sup>+</sup> and K<sup>+</sup> channels

**Question 9****0 / 1 point**

At a synapse, binding of the neurotransmitter to a ligand-gated K<sup>+</sup> channel receptor causes

- an action potential
- a threshold potential
- a Na<sup>+</sup> equilibrium potential
- an inhibitory post-synaptic potential
- a membrane potential

**Question 10****0 / 1 point**

The membrane potential at which the electrical and chemical gradients of Na<sup>+</sup> are equal in magnitude but opposite in direction is the

- equilibrium potential of Na<sup>+</sup>
- local potential
- excitatory post-synaptic potential
- threshold potential
- resting potential

**Question 11****0 / 1 point**

"the rate that pyruvate is produced given a specific concentration of glucose" is a pretty good definition

- glycolytic expression
- glycolytic synthesis
- glycolytic hydrolysis
- glycolytic diffusion
- glycolytic activity

**Question 12****0 / 1 point**

By definition, a muscle contraction

- generates active force
- lengthens the muscle
- generates compression
- shortens the muscle
- moves the skeleton

**Question 13****0 / 1 point**

Elite sprinters have locomotory muscles that generate more power, compared to elite distance runners. All of these contribute to increased power EXCEPT

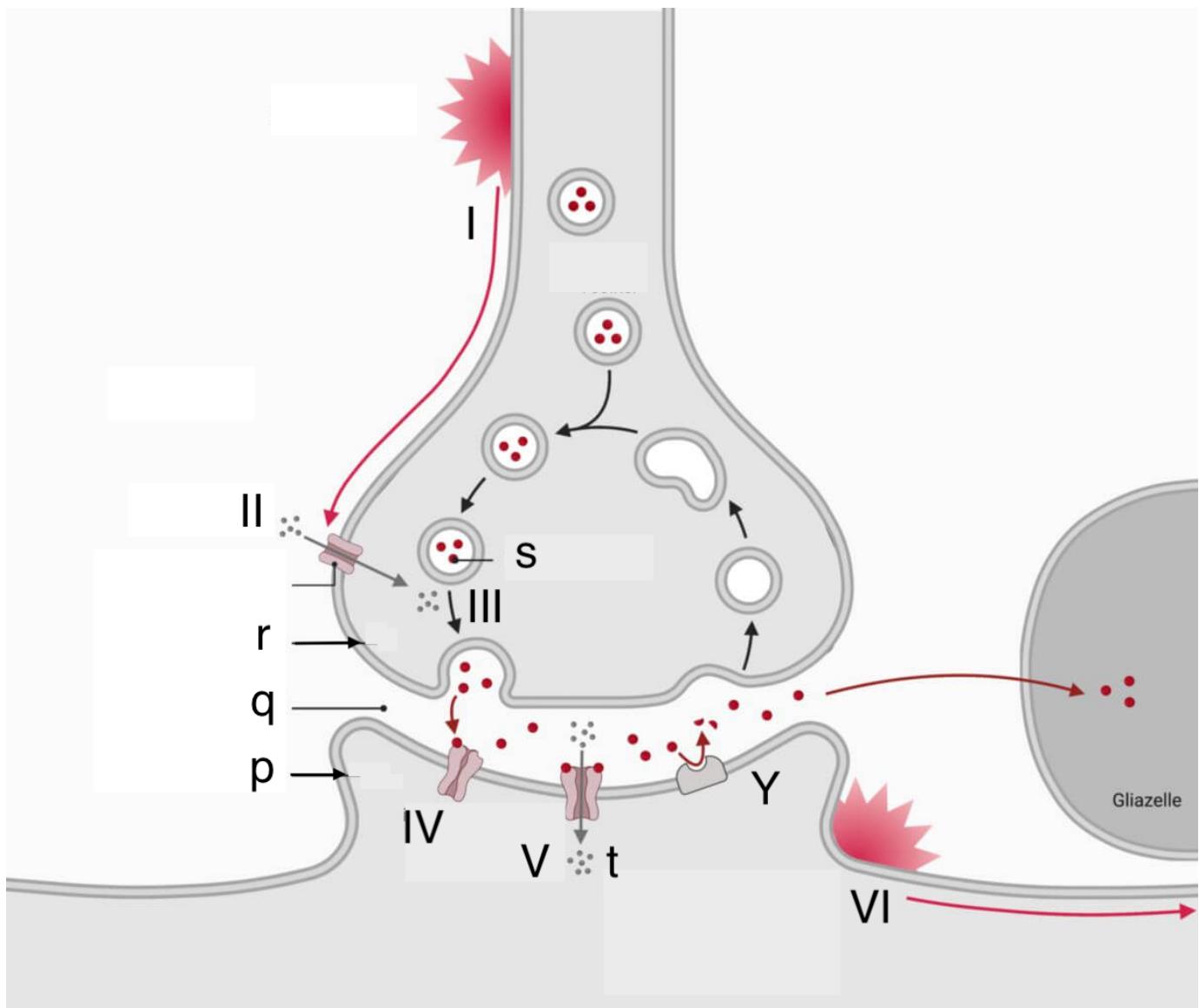
- higher rate of crossbridge cycling
- more myofibrils per cross-sectional area
- hypertrophied fibers
- myosin heads that pull on thin filaments with more force
- higher concentration of glycolytic enzymes

**Question 14****0 / 1 point**

Glycolysis is called an anaerobic pathway for ATP synthesis because

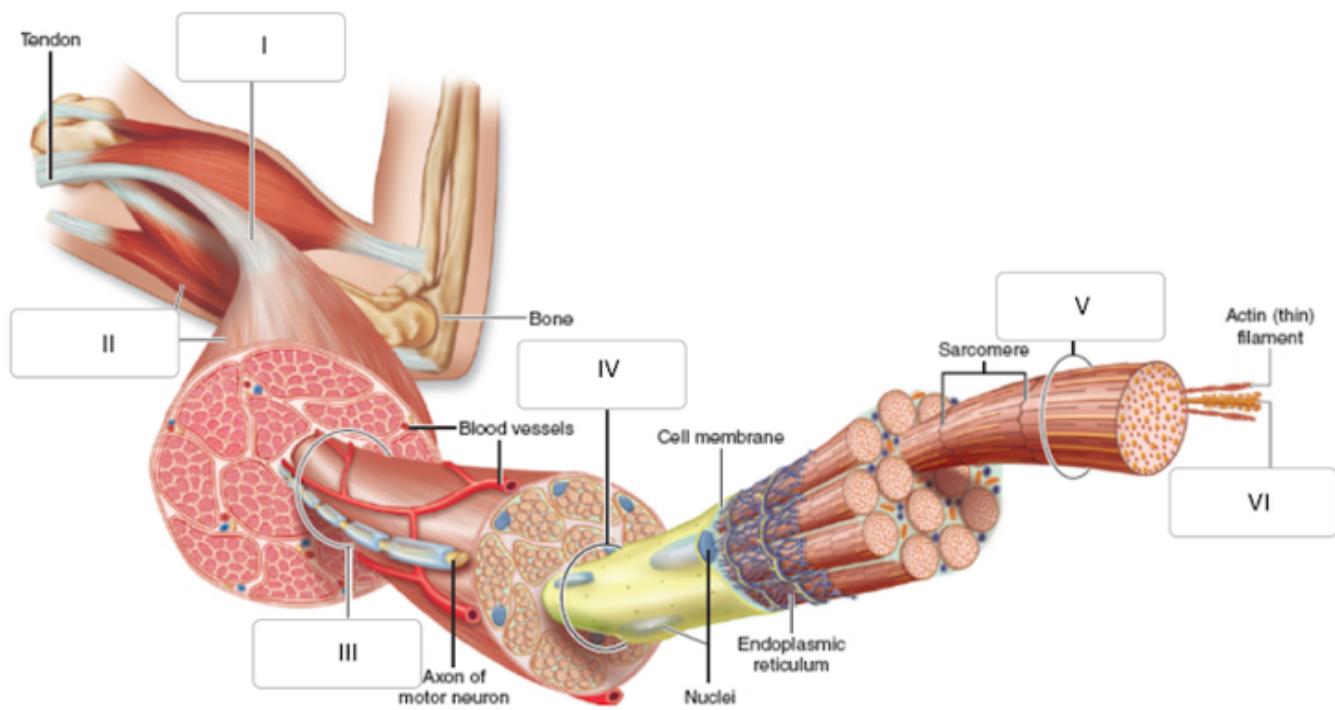
- it occurs only during easy (anaerobic) activity (activity that is slow enough that we don't need to move O<sub>2</sub> to the muscle)
- it occurs when the muscle fiber is anaerobic -- there is no O<sub>2</sub> in the cell
- it occurs only during intense (anaerobic) activity (activity that is so short that we don't need to move O<sub>2</sub> to the muscle)
- O<sub>2</sub> is not a substrate in any of the reactions

**Question 15****0 / 1 point**



In the image above, s labels

- Ca<sup>++</sup>
- ion channel
- Na<sup>+</sup>
- receptor
- neurotransmitter

**Question 16****0 / 1 point**

From the American Journal of Nursing 2011:

"Disuse syndrome is a classic pattern of muscular deconditioning and atrophy resulting from inactivity or immobilization. Disuse atrophy is characterized by reductions in muscle fiber size."

The word \*fiber\* in this sentence refers to which labeled structure?

- III
- II
- V
- IV
- VI

**Question 17****0 / 1 point**

an inward Na<sup>+</sup> current

- is created by the pumping of Na<sup>+</sup> by the Na<sup>+</sup>/K<sup>+</sup> pump
- is the diffusion of Na<sup>+</sup> ion from outside the plasma membrane to the inside of the plasma membrane
- is the pumping of Na<sup>+</sup> into the cell, opposing the Na<sup>+</sup>/K<sup>+</sup> pump
- is the diffusion of Na<sup>+</sup> from the axon hillock to the axon terminus
- is the diffusion of Na<sup>+</sup> from the axon terminus to the axon hillock

**Question 18****0 / 1 point**

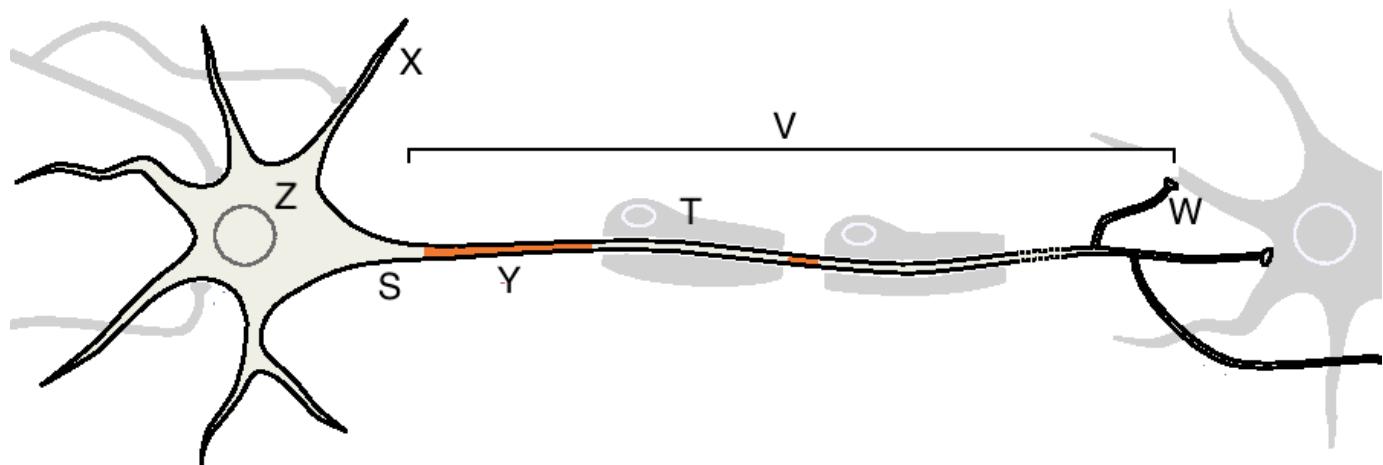
acetylcholinesterase

- causes excitatory post-synaptic potentials
- increases neurotransmitter secretion
- reduces neurotransmitter secretion
- causes inhibitory post-synaptic potentials
- helps to "turn off" signaling at a synapse

**Question 19****0 / 1 point**

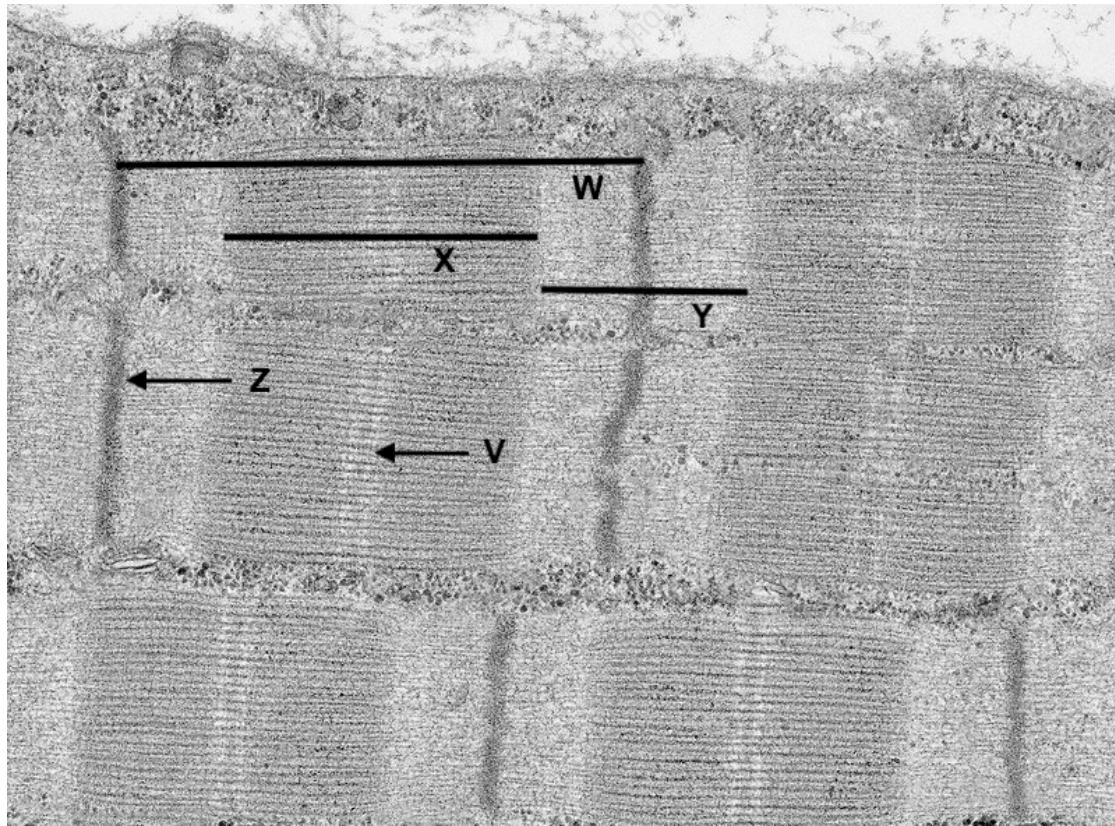
When using glucose as a fuel for ATP synthesis

- the chemical potential energy in glucose is converted to CO<sub>2</sub> and H<sub>2</sub>O
- the complete oxidation of glucose to make ~ 31 ATP occurs in the cytoplasm
- the chemical potential energy in the glucose is transferred to chemical potential energy in ATP
- the first reaction in the process occurs in the mitochondria
- glucose is converted to ATP

**Question 20****0 / 1 point**

The structure labeled X is

- axon
- initial segment
- axon terminus
- dendrite
- soma

**Question 21****0 / 1 point**

In muscle contraction (using the image above),

- the Z on each side of W is pulled toward V
- the width of Y lengthens
- the width of X lengthens
- The width of X shortens
- The structure labeled X splits at V, with everything to the left of V sliding to the left, and everything on the right of V sliding to the right

**Question 22****0 / 1 point**

sensory information from the skin in the midline of the back travels to the spinal cord through the

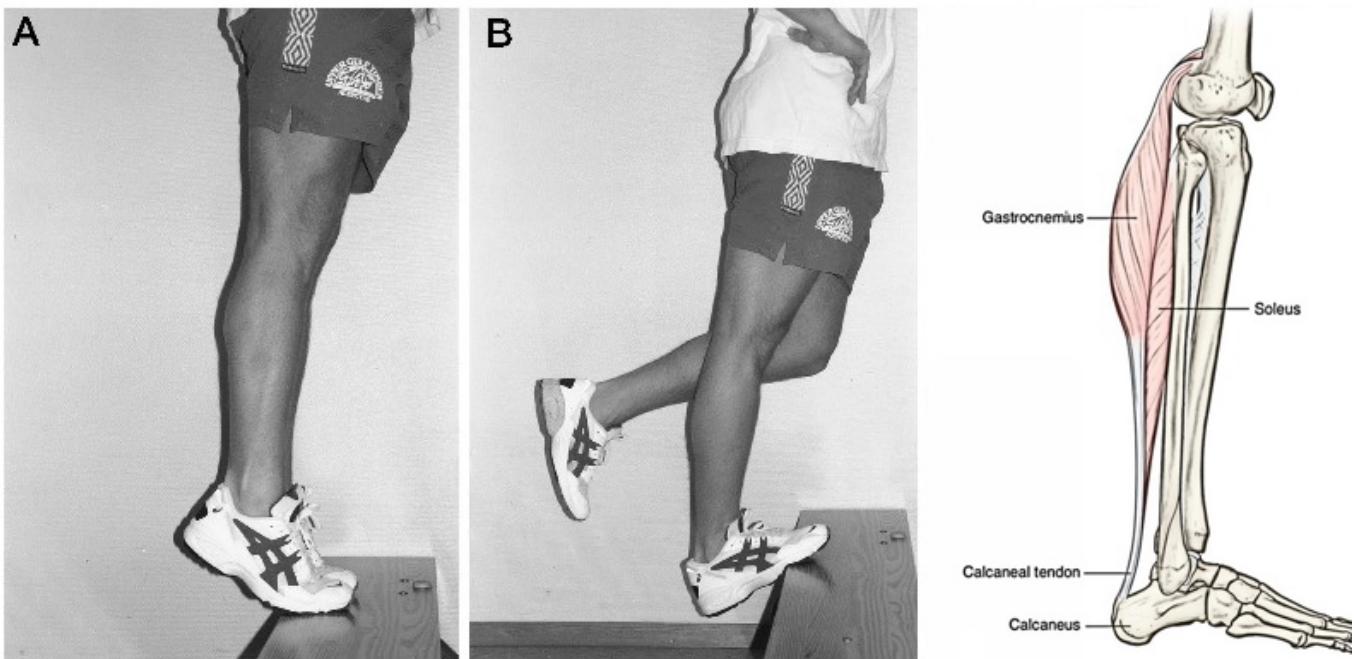
- ventral root
- ventral (anterior) ramus
- dorsal (posterior) ramus
- descending tract
- ascending tract

**Question 23****0 / 1 point**

motor neuron cell bodies are located in what structure of the spinal cord?

- central canal
- white matter
- spinal nerve
- ventral horn
- dorsal root ganglion

**Question 24****0 / 1 point**



A common physical therapy exercise for achilles tendinopathy is shown in the image above. The exercise starts in the position in A and then slowly drops the heel to the position in B. During this exercise, the gastrocnemius muscle undergoes

- concentric contraction
- shortening
- compression
- eccentric contraction
- relaxation

### Question 25

0 / 1 point

The equilibrium potential of K<sup>+</sup> is -90 mV.

The membrane potential is -70 mV.

If the membrane is suddenly permeable to K<sup>+</sup> then

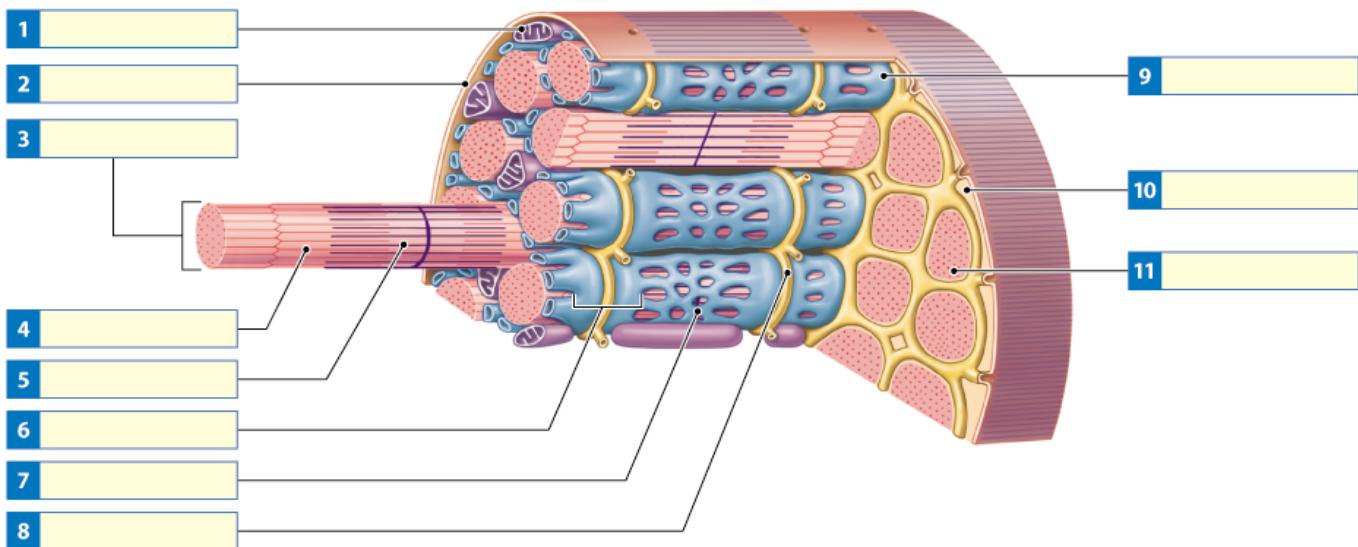
- K<sup>+</sup> will diffuse into the cell, carrying positive charges in. As a consequence, the membrane potential will move toward -70 mV
- K<sup>+</sup> will diffuse out the cell, carrying positive charges out. As a consequence, the membrane potential will move toward -70 mV
- K<sup>+</sup> will diffuse out of the cell, carrying positive charges out. As a consequence, the membrane potential will move toward -90 mV
- There is not enough information to answer this question
- K<sup>+</sup> will diffuse into the cell, carrying positive charges in. As a consequence, the membrane potential will move toward -90 mV

**Question 26****0 / 1 point**

What is the unusual property of an excitable membrane that allows it to generate an action potential?

- a high density of Na<sup>+</sup>/K<sup>+</sup> pumps
- a high density of voltage-gated channels
- it is not permeable to Ca<sup>++</sup>
- a resting membrane potential of -70 mV
- a high density of ligand-gated channels

**Question 27****0 / 1 point**

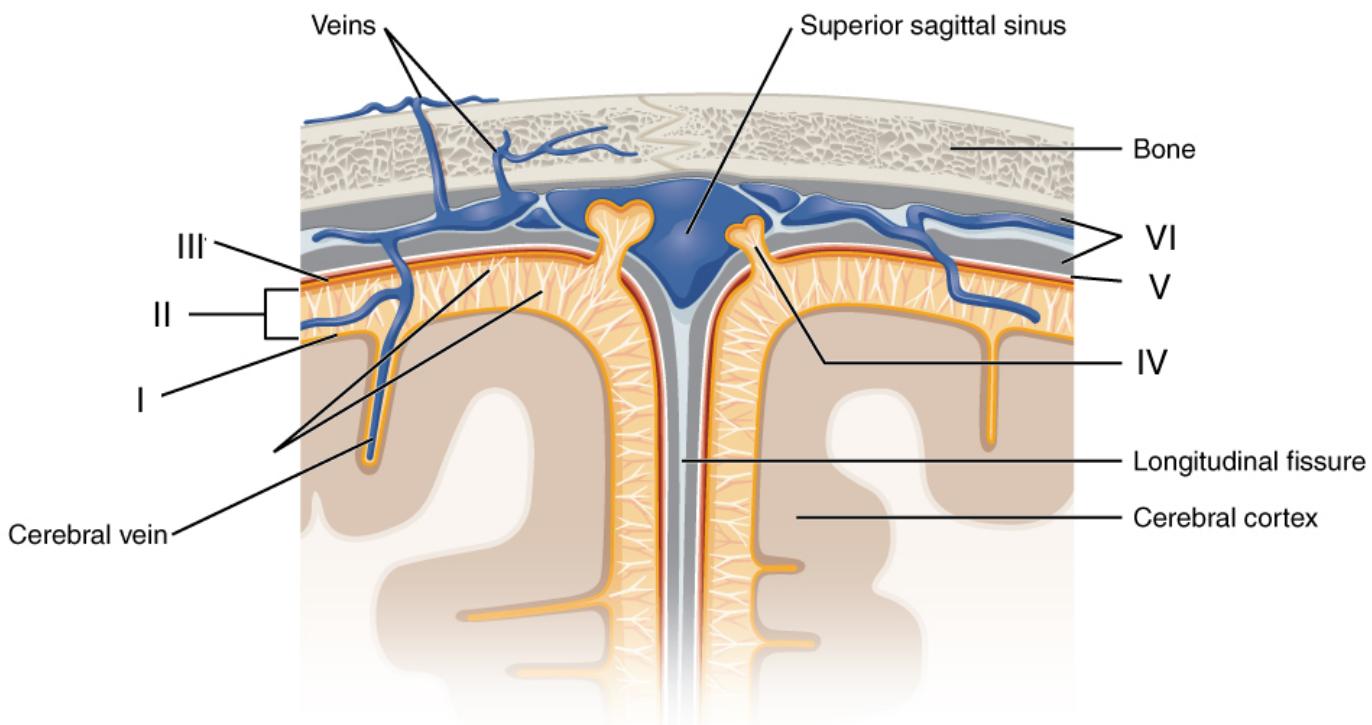


In the image above, label 7 points to

- a t-tubule
- a myofibril
- sarcoplasmic reticulum
- myofilament
- a mitochondrion

### Question 28

0 / 1 point

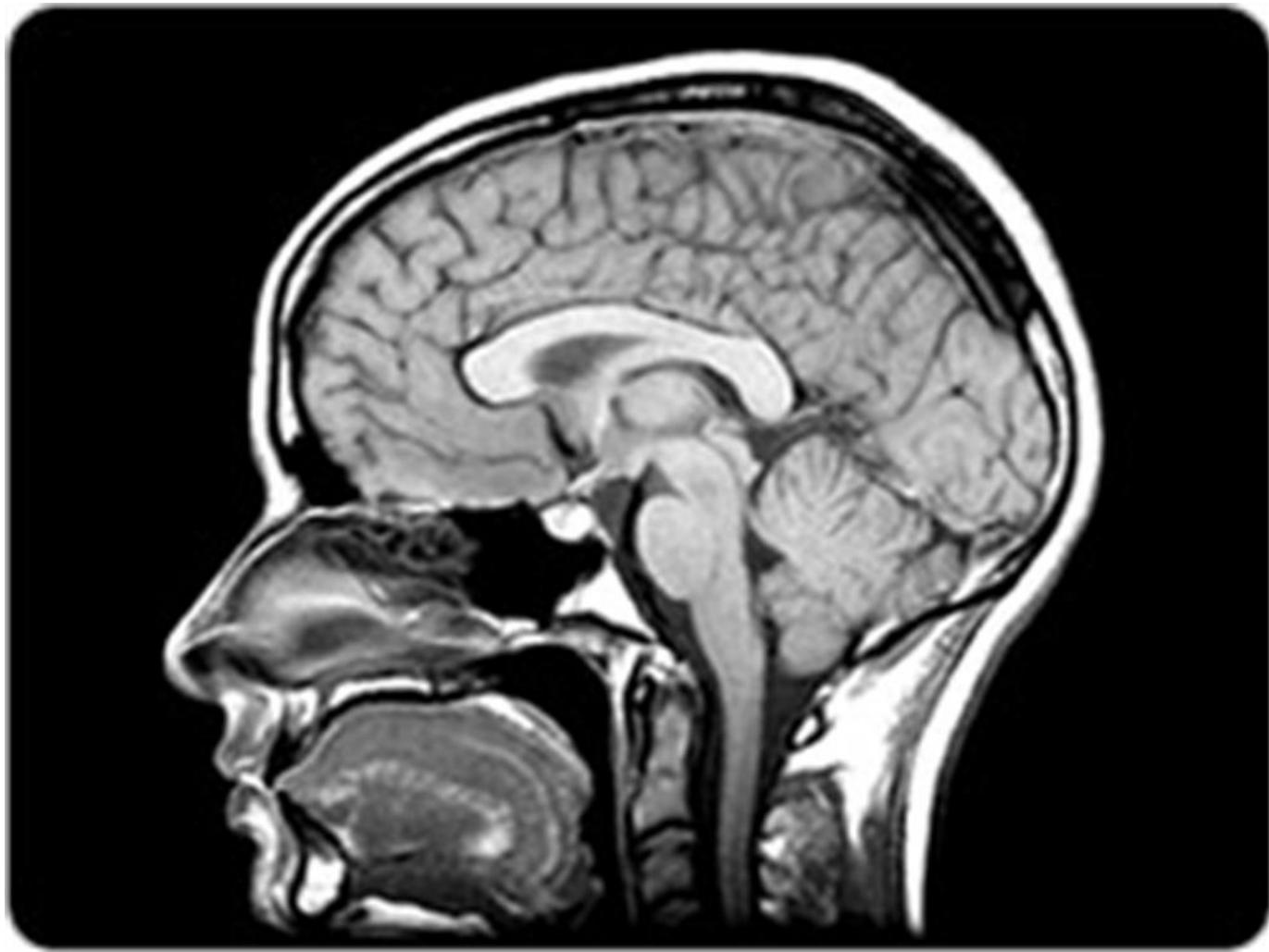


This view of the anatomy of the cranial meninges is a

- a dorsal view of the head
- a lateral view of the head
- a coronal section of the head
- a sagittal section of the head
- a transverse section of the head

### Question 29

0 / 1 point



This MRI of the head shows

- a sagittal section of the brain
- a coronal section of the brain
- a dorsal view of the brain
- a lateral view of the brain
- a transverse section of the brain

### Question 30

0 / 1 point

the cells that sense accelerations are located in

- the retina
- the roof of the nasal cavity
- the thalamus
- the vestibular system of the inner ear
- the brainstem

**Question 31****0 / 1 point**

The maximum force generated by a muscle fiber is proportional to

- the number of mitochondria in the fiber
- the number of myofibrils recruited to contract in the fiber
- the cross sectional area of the myofilaments
- the length of the fiber
- the total number of thick filaments in the fiber

**Question 32****0 / 1 point**

the thalamus contains nuclei that function in

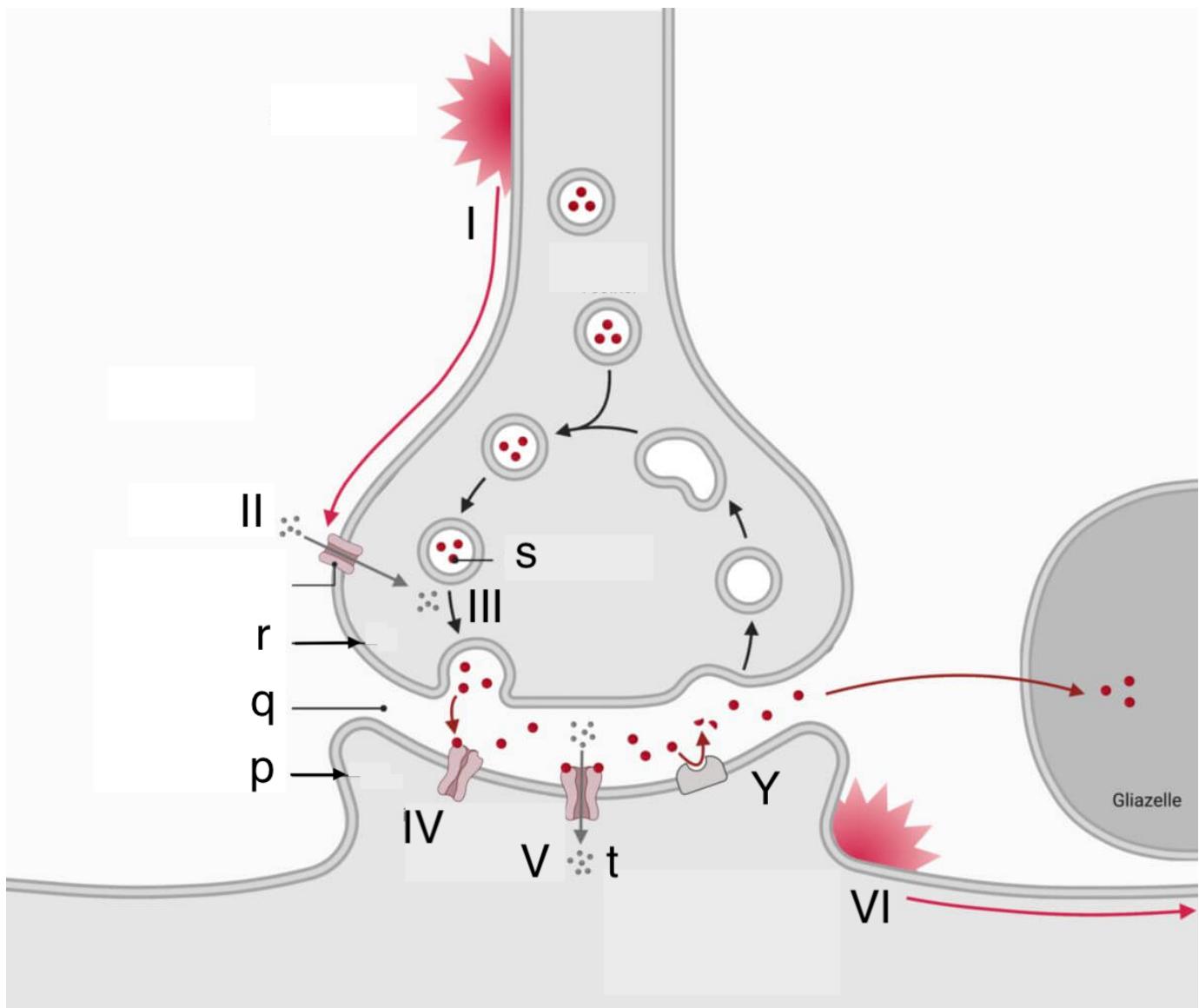
- the conscious processing of planning the future, deliberation, and decision making
- "muscle memory" -- the creation and implementation of the muscle patterns necessary for complex motor activitates
- reflexive processing of visual and auditory stimuli and control of fundamental processes like breathing rate and heart rate
- emotional processing, such as the response to fear
- the relay of sensory information from the periphery to the primary cortical areas

**Question 33****0 / 1 point**

a cluster of neuron cell bodies in the CNS is known as a

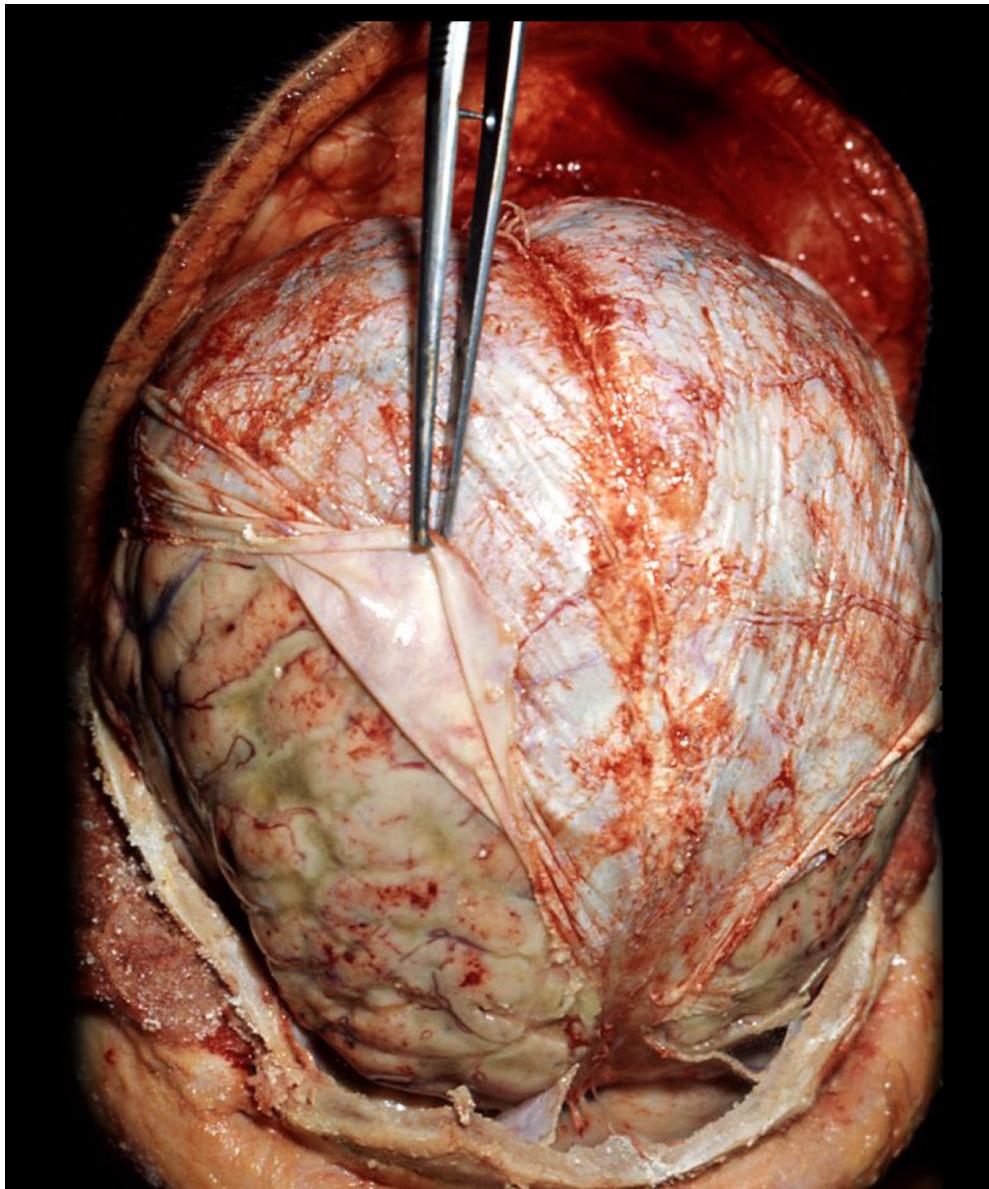
- ganglion
- thalamus
- nucleus
- tract
- gray matter

**Question 34****0 / 1 point**



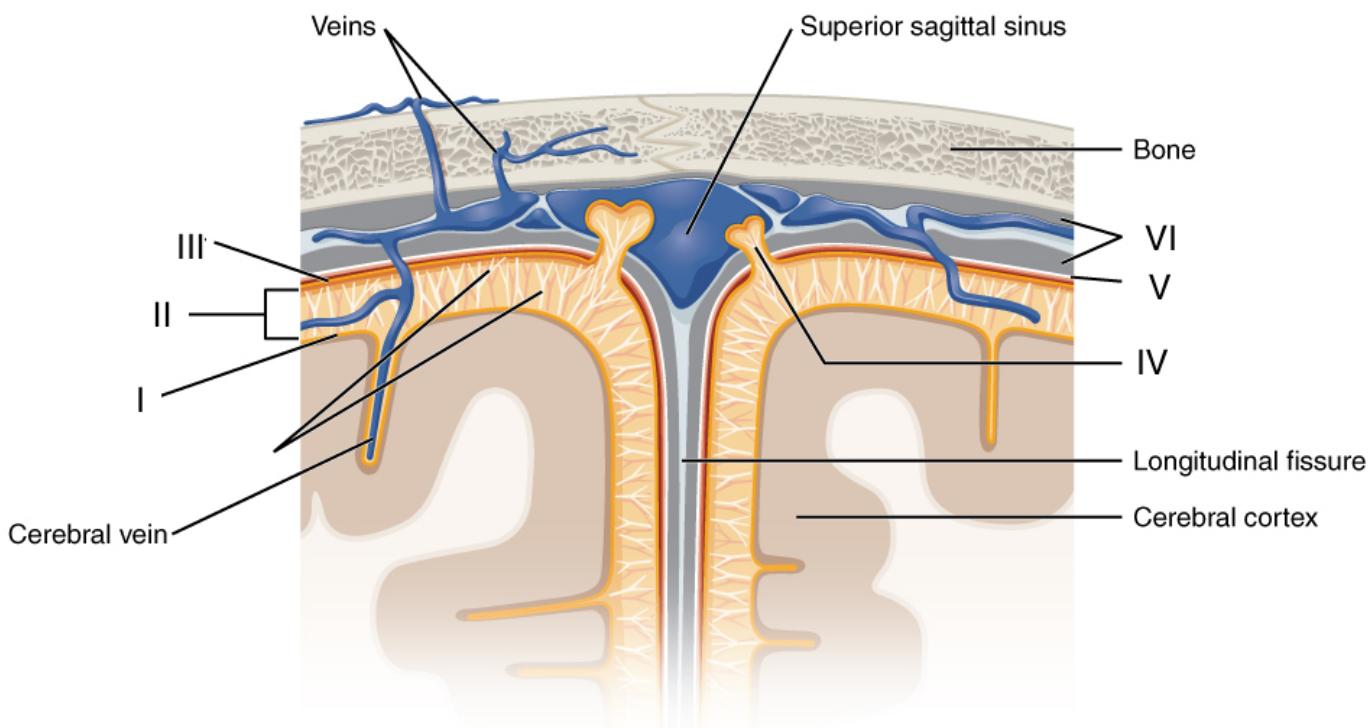
In the image above, diffusion of ion through open ligand-gated ion channels on the post-synaptic membrane is labeled by event

- I
- III
- II
- IV
- V

**Question 35****0 / 1 point**

In the image above, the forceps have pulled back

- the outer layer of the meninges
- a cranial ligament
- bone that has been demineralized
- the dense connective tissue of the skin
- the thin cortex of the brain

**Question 36****0 / 1 point**

The Pia Mater is labeled

- VI
- II
- V
- IV
- III
- I

**Question 37****0 / 1 point**

The integration of sensory information with associational information stored in the brain that then rises to consciousness is called

- sensation
- facilitation
- perception
- sensory transduction
- proprioception

**Question 38****0 / 1 point**

The resting membrane potential of a neuron is about

- +200 mV
- 100 mV
- 70 mV
- + 60 mV
- 0 mV

**Question 39****0 / 1 point**

primary sensory cortex is confined to the

- spinal cord
- parietal, occipital, and temporal lobes
- occipital lobe
- frontal and parietal lobes
- basal nuclei

**Question 40****0 / 1 point**

The facial nerve includes

- somatic motor to the muscles of mastication
- sensory to the skin of the face
- special sensory to the sense organs of the face including vision, olfaction, and auditory
- somatic motor to the muscles of facial expression
- somatic motor to the extrinsic eye muscles

**Question 41****0 / 1 point**

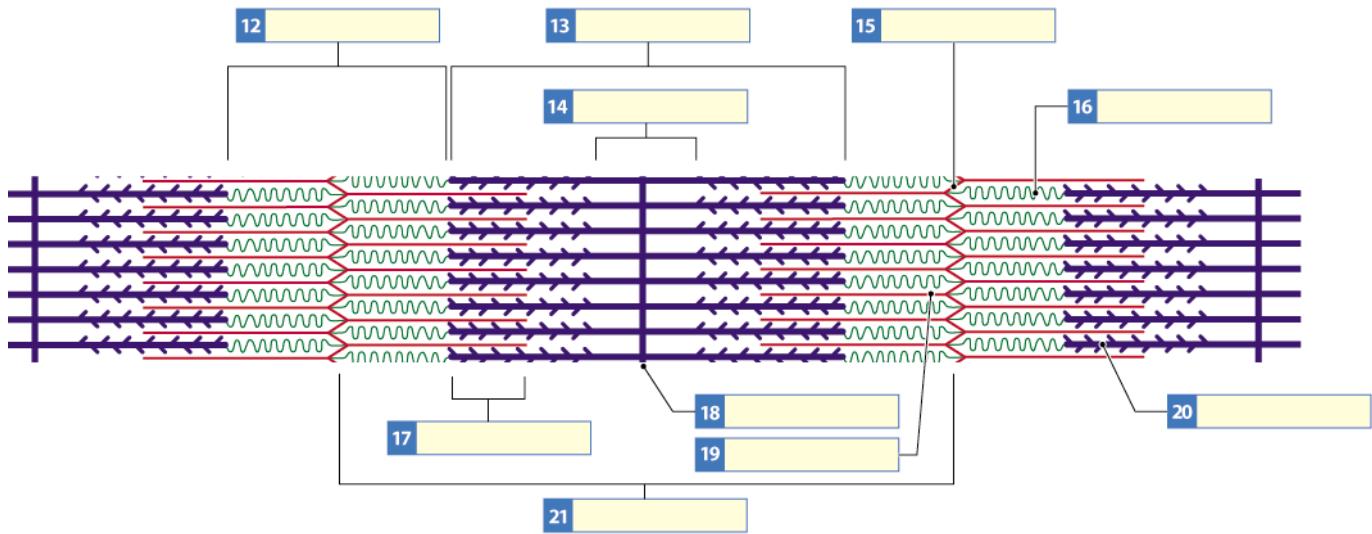
Two moderately sized EPSPs sum to create

- a small hyperpolarized potential
- a large depolarized potential
- a small depolarized potential
- a large hyperpolarized potential
- no change in potential

**Question 42****0 / 1 point**

In a typical neuron, what part of the cell initiates the action potential?

- the presynaptic membrane
- the axon terminus
- initial segment of the axon
- the soma
- dendrites

**Question 43****0 / 1 point**

In the image above, label 19 points to

- a thin filament
- a thick filament
- a sarcomere
- the A band
- t-tubules

**Question 44****0 / 1 point**

In the context of aerobic ATP synthesis, the **major** function of oxidative phosphorylation is to

- add H<sub>2</sub>O to our body fluids
- remove oxygen from our blood
- generate a battery composed of a proton gradient
- generate most of the ATP of glucose or fatty acid oxidation
- add a phosphate to glucose

**Question 45****0 / 1 point**

The ability to sense the position of one's limbs in space is mediated by what sensory cells?

- chemoreceptors in the hypothalamus
- touch receptors in the skin
- stretch receptors in muscle and tendon
- mechanoreceptors in the inner ear
- photoreceptors in the retina

**Question 46****0 / 1 point**

the brainstem contains circuits controlling

- "muscle memory" -- the creation and implementation of the muscle patterns necessary for complex motor activitates
- emotional processing, such as the response to fear
- the conscious processing of planning the future, deliberation, and decision making
- reflexive processing of visual and auditory stimuli and control of fundamental processes like breathing rate and heart rate
- the relay of sensory information from the periphery to the primary cortical areas

**Question 47****0 / 1 point**

The white matter of the brain and spinal is composed of

- tracts containing the axons of CNS neurons
- clusters of neuron cell bodies
- all the glial cells of the CNS (the neurons are in the gray matter)
- nerves
- adipose cells

**Question 48****0 / 1 point**

What is necessary for a local potential on a post-synaptic membrane?

- leak channels
- voltage-gated ion channels
- ligand-gated ion channels
- thermally-gated ion channels
- mechanically-gated ion channels

**Question 49****0 / 1 point**

Thermoceptors sense what

- light
- force
- electrical fields
- specific chemicals
- temperature

**Question 50****0 / 1 point**

**SQUAT****⬇️ TIP**

Keep your head up, torso straight, and your core engaged as you squat, sending your hips back and down.



To rise from the squat position, we need to

- flex the hip and extend the knee
- flex the hip and knee
- extend the hip and knee
- extend the hip and flex the knee

Done