

## Unit 9 Quiz

1. What is one difference between motor neuron pools and motor units?
  - A) Motor neuron pools innervate a single muscle fiber, while motor units are capable of moving large muscles, such as quadriceps.
  - B) Motor neuron pools innervate a single muscle, while motor units travel up the spinal cord.
  - C) Motor neuron pools directly synapse with the primary motor cortex, while motor units synapse with the spinal cord neurons.
  - D) None of the above.
2. Lower motor neurons are organized somatotopically in the spinal cord. This means that distal muscles of limbs are innervated by lower motor neurons located in which part of the spinal cord?
  - A) Medial part of the ventral horn.
  - B) Lateral part of the ventral horn.
  - C) Medial part of the dorsal horn.
  - D) Lateral part of the dorsal horn.
3. Match the following characteristics of motor neurons with the correct subset of motor neurons. U= upper motor neurons, L= lower motor neurons
  - A) Carry information from brain centers to the spinal cord.
  - B) Cranial nerves.
  - C) Found only in the central nervous system.
  - D) Innervate somatic muscles of the body.**
4. Why does lower motor neuron syndrome result in muscle atrophy?
  - A) Damaged alpha motor neurons in the muscle spontaneously fire action potentials.
  - B) Individual muscle fibers can still fire, resulting in fibrillations.
  - C) Cortical muscle neurons cannot synapse with the spinal cord.
  - D) Muscles that are innervated by the lower motor neurons are deprived of growth factors.
5. Which of the following is a sign or symptom of an upper motor neuron syndrome? Place an "X" next to the correct symptoms.
  - A) Atrophy
  - B) Positive Babinski sign
  - C) Fasciculations
  - D) Exaggerated stretch reflex
  - E) Clonus
6. What is one reason why damage to the left motor cortex would cause motor dysfunction on the right side of the body?
  - A) The lateral corticospinal tract decussates in the medulla oblongata so the opposite side of the body is affected.



- B) The ventral corticospinal tract decussates in the medulla oblongata so the opposite side of the body is affected.
  - C) All motor neurons decussate at the thalamus so the opposite side of the body is affected.
  - D) None of the above.
7. The myotatic stretch reflex results in activation of which type of muscle fibers?
- A) Ib
  - B) IIa
  - C) Ia
  - D) gamma
8. The golgi tendon organ is involved in which of the following reflexes?
- A) Autogenic inhibition reflex
  - B) Myotatic stretch reflex
  - C) Flexor reflex
  - D) Contractile reflex
9. Which of the following is true of a flexor reflex?
- A) Flexor reflex involves cortical input.
  - B) Flexor reflex involves Group III afferents which travel up the spinal cord to synapse on alpha motor neurons.
  - C) Flexor reflexes are capable of moving muscles on the opposite side of the body of the stimulus.
  - D) Flexor reflex involves inhibitory neurons.
10. The homunculus is the somatotopic representation of body regions moved upon electrical stimulation of the motor cortex. Using the homunculus as your map, order these body regions from MEDIAL to LATERAL in terms of where they reside in the motor cortex. (Use 1 for most medial, 2 for next medial, etc and 8 for most lateral).
- A) Torso
  - B) Tongue
  - C) Foot
  - D) Hip
  - E) Knee
  - F) Hand
  - G) Face
  - H) Wrist
11. Match the descending motor pathway with the correct function. Functions are voluntary movements (VM) and posture/balance (PB).
- A) Tectospinal tract
  - B) Rubrospinal tract



- C) Lateral corticospinal tract
- D) Vestibulospinal tract

12. What is the most important hypothalamic nucleus in the central autonomic network?

- A) Paraventricular nucleus
- B) Solitary nucleus
- C) Amygdala
- D) Septal nucleus

