

Name: _____

Date: _____

Warm-Up: Skeletal Muscle Activity A (pp 188-195)

Short Answer

1. The gap between the motor neuron and the muscle fiber it supplies at the neuromuscular junction is called the _____. (p 188)
2. When a skeletal muscle is fully contracted, the _____ are closer to the thick filaments. (p 191)
3. A smooth, sustained contraction is called _____. (p 192-193)
4. Anaerobic glycolysis produces ATP in the absence of _____. (p 194)
5. Contractions in which muscles do not produce movement or shortening are termed _____. (p 195)

Multiple Choice: Identify the choice that best completes the statement or answers the question.

- _____ 6. Acetylcholine is: (p 188)
- Ⓐ an ion pump on the postsynaptic membrane
 - Ⓑ a source of energy for muscle contraction
 - Ⓒ a component of thick myofilaments
 - Ⓓ an oxygen-binding protein
 - Ⓔ a neurotransmitter that stimulates skeletal muscle
- _____ 7. The gap between the axon terminal of a motor neuron and the sarcolemma of a skeletal muscle cell is called the: (p 188)
- Ⓐ motor unit
 - Ⓑ sarcomere
 - Ⓒ neuromuscular junction
 - Ⓓ synaptic cleft
 - Ⓔ cross bridge
- _____ 8. Neurotransmitters are released upon stimulation from a nerve impulse by the: (p 188)
- Ⓐ myofibrils
 - Ⓑ motor unit
 - Ⓒ thick filaments
 - Ⓓ axon terminals of the motor neuron
 - Ⓔ sarcolemma of the muscle cell
- _____ 9. Which of these events must occur first to trigger the skeletal muscle to generate an action potential and contract: (p 188)
- Ⓐ sodium ions rush into the cell
 - Ⓑ acetylcholine (ACh) causes temporary permeability to sodium
 - Ⓒ diffusion of potassium ions out of the cell
 - Ⓓ operation of the sodium-potassium pump
 - Ⓔ acetylcholinesterase (AChE) breaks down acetylcholine (ACh)

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Skeletal Muscle Activity

- ___ 10. Why are calcium ions necessary for skeletal muscle contraction: (*p 191*)
- Ⓐ calcium increases the action potential transmitted along the sarcolemma
 - Ⓑ calcium releases the inhibition on Z discs
 - Ⓒ calcium triggers the binding of myosin to actin
 - Ⓓ calcium causes ATP binding to actin
 - Ⓔ calcium binds to regulatory proteins on the myosin filaments, changing both their shape and their position on the thick filaments
- ___ 11. The mechanical force of contraction is generated by: (*p 191*)
- Ⓐ shortening of the thick filaments
 - Ⓑ shortening of the thin filaments
 - Ⓒ a sliding of thin filaments past thick ones
 - Ⓓ the "accordian-like" folding of thin and thick filaments
 - Ⓔ the temporary disappearance of thin filaments
- ___ 12. Which of the following can actually shorten during a muscle contraction: (*p 191*)
- Ⓐ myosin filaments
 - Ⓑ A bands
 - Ⓒ actin filaments
 - Ⓓ sarcomeres
 - Ⓔ myofilaments
- ___ 13. A single, brief, jerky muscle contraction is termed: (*p 192*)
- Ⓐ tetanus
 - Ⓑ twitch
 - Ⓒ isometric
 - Ⓓ isotonic
 - Ⓔ anaerobic
- ___ 14. Creatine phosphate (CP) functions within the muscle cells by (*p 193*):
- Ⓐ forming a temporary chemical compound with myosin
 - Ⓑ forming a chemical compound with actin
 - Ⓒ inducing a conformational change in the myofilaments
 - Ⓓ storing energy that will be transferred to ADP to resynthesize ATP as needed
 - Ⓔ storing energy that will be transferred to ATP to resynthesize ADP as needed
- ___ 15. The condition of skeletal muscle fatigue can be best explained by: (*p 195*)
- Ⓐ the all-or-none law
 - Ⓑ the inability to generate sufficient quantities of ATP due to feedback regulation of synthesis
 - Ⓒ insufficient intracellular quantities of ATP due to excessive consumption
 - Ⓓ a total lack of ATP
 - Ⓔ inadequate numbers of mitochondria