

Section 1: 10 pt each

1. Sketch a force-length curve and use the sliding filament theory to explain the different regions.
2. Sketch a force-velocity curve and use the crossbridge theory to explain the decline in force.
3. Explain how mononucleated, muscle-resident, mitotically quiescent cells contribute to changes in muscle mass.
4. Outline the signaling pathway between IGF-1 and protein synthesis.
5. Outline the signaling pathway between ATP hydrolysis and mitochondrial biogenesis.
6. Identify a muscle-specific ubiquitin ligase and outline the ubiquitin-proteasome pathway.

Section 2: 5 pt each

7. Which is more effective for inducing muscle hypertrophy: concentric or eccentric exercise? Why do you believe that?
8. Pick a calcium-dependent protein, other than troponin, explain its function and its contribution to skeletal muscle plasticity.
9. Compare and contrast synergist ablation with hypertrophy specific training.
10. How are the length-tension and velocity-tension relationships involved in eccentric injury?
11. We discussed immobilization as both a stimulus for muscle hypertrophy and muscle atrophy. How can it be both?
12. Give one explanation for the dramatic loss of muscle mass that accompanies aging.
13. Compare and contrast the muscular consequences of peripheral denervation with spinal cord injury.
14. Are anti-inflammatory drugs beneficial or harmful during exercise & recovery? Why do you believe that?