1. Describe the ascending and descending pathways involved in the response to painful stimuli (both slow and fast-pain pathways), as if you just cut your finger, for example. Discuss the natural (endogenous) forms of pain control.

2. Explain how the different kinds of proprioceptors function to maintain tone in skeletal muscles and help protect muscles from damage.

3. Compare and contrast muscle fiber types. Be sure to include information on cell structure, metabolism, training effects and circumstances of recruitment (what activities are they suitable for?).

4. Describe the mechanism of a muscle contraction and relaxation within a muscle cell. Be sure to include the functions of actin, myosin, troponin, tropomyosin, calcium, and ATP.

5. Compare and contrast the three main metabolic pathways by which muscle cells generate ATP: 1) Phosphate bonds in creatine phosphate, 2) aerobic metabolism, and 3) anaerobic metabolism. Under what circumstances might one of these pathways be "preferred"?

6. Compare and contrast the structure and function of the Somatic Nervous system and the Autonomic Nervous system.

7. Explain the function of the various receptors for autonomic neurotransmitters that determine the action on effector organs, and the advantage of dual innervation.

8. Compare and contrast the role of Ca\(^{2+}\) in the physiology of cardiac contractile cells and skeletal muscle cells.

9. Explain all of the electrical/physical events that take place during one heartbeat (i.e. one cardiac cycle).

10. Compare and contrast the generation of action potentials in cardiac autorhythmic cells and contractile cells.