Practice Test 04 Answer Key

Part A: Multiple Choice

1. **B** (Sarcomere)
2. **B** (Myosin is thick; Actin is thin)
3. **A** (Sarcoplasmic reticulum)
4. **C** (ATP)
5. **A** (One neuron and all the muscle fibers it stimulates)
6. **B** (Isometric)
7. **B** (Muscles rely on lactic acid fermentation)
8. **B** (Actins and myosins slide past each other)
9. **A** (Brain and spinal cord)
10. **B** (Dendrite)
11. **C** (Sympathetic division)
12. **B** (Schwann cells)
13. **B** (Synapse)
14. **B** (Cerebellum)
15. **B** (Sensory neuron, interneuron, motor neuron)
16. **B** (All-or-none electrical signals)
17. **B** (Secrete hormones directly into the blood)
18. **C** (Pituitary)
19. **B** (Lower blood glucose levels)
20. **B** (Cortisol)
21. **B** (Iodine)
22. **B** (Destruction of insulin-producing pancreatic cells)
23. **A** (Steroid hormones)
24. **B** (Oxytocin and ADH)
25. **B** (Ventricles)
26. **C** (Vena cava)
27. **A** (Tricuspid valve)
28. **B** (Lungs)

29. **B** (SA node)
30. **C** (Capillaries)
31. **B** (Pressure when ventricles contract)
32. **D** (Platelets)

Part B: Fill in the Blank

1. Hemoglobin
2. Target
3. Neuromuscular
4. Cerebrum
5. Arteries
6. Steroid (or Lipid-soluble)
7. Acetylcholine (ACh)
8. Negative
9. Aorta
10. Cardiac Output

Part C: Short Answer

1. **Sliding Filament Theory**: Myosin heads attach to actin filaments creating cross-bridges. Using ATP, myosin pulls actin toward the center of the sarcomere (power stroke). The filaments slide past each other, shortening the sarcomere and causing muscle contraction.

2. **Sympathetic vs Parasympathetic**: Sympathetic is "fight or flight" (increases heart rate, dilates pupils). Parasympathetic is "rest and digest" (decreases heart rate, stimulates digestion). They work in opposition to maintain balance.

3. **Diabetes**: Type 1 is an autoimmune disease where the pancreas produces no insulin; treated with insulin injections. Type 2 is caused by insulin resistance; treated with diet, exercise, and medication.

4. **Blood Flow**: Vena Cava -> Right Atrium -> Tricuspid Valve -> Right Ventricle -> Pulmonary Valve -> Pulmonary Artery -> Lungs (pick up O2) -> Pulmonary Veins -> Left Atrium -> Bicuspid Valve -> Left Ventricle -> Aortic Valve -> Aorta -> Body.

5. **Glucose Regulation**: High blood sugar triggers the pancreas to release **Insulin**, causing cells to take up glucose (lowering sugar). Low blood sugar triggers the release of **Glucagon**, causing the liver to release stored glucose (raising sugar). This is negative feedback.