Directions: Unless otherwise noted, use Standard English and well-organized sentences and paragraphs to respond to the statements or questions. Note point values.

1. Use the graph to describe the interplay between skeletal muscles, the mechanics of breathing, and the flow of gases? (15)

2. Demonstrate how the lung and the respiratory processes are beautifully designed to maximize gas diffusion. That is, how is diffusion maximized at the lungs? (10)
3. Draw and label a normal oxygen dissociation curve. Draw in and clearly label the curve that would result from low CO₂, and with extra 2,3 biphosphoglyceric acid. Explain one curve shift. (15)

4. A naughty five-year-old consumes an excessive number of alka-seltzers (antacid). Use a step-by-step flowchart sequence from start to finish demonstrating your understanding of the anatomy and physiology of the negative feedback cycle. Confine your answer to the peripheral chemoreceptors and their associations. (15)
5. Identify the terms with respect to the autonomic nervous system. Give details to demonstrate your understanding of the term and its relationships to ANS functioning. (15 pts)

a) Terminal ganglia

b) Dual innervation

c) Nicotinic receptors

d) Greater divergence in the sympathetic system

e) Craniosacral outflow

6. The sympathetic nervous system can be characterized as the "E" division—why? Choose three different physiological effects to support this characterization. (5,5)

Describe the relationship of the adrenal medulla to the sympathetic nervous system and its effect on the events described above. (10)