The Respiratory System:

Structure and Function

Overview of External & Internal Respiration

Describe the anatomy associated with each of these functions.
Gross Anatomy of the Respiratory System

Describe the embryonic origin of the pharynx and the respiratory system.

What are the functions of the respiratory system?

What tissue helps prevent the collapse of air passageways in the trachea, bronchi, and bronchioles? Identify some of these by name.

Detailed Anatomy of the Upper Airway

Describe the action that lowers the epiglottis to protect the airway. How is this different from the function of the superior vocal folds?
Bronchial Tree and Pleural Membranes

Name the epithelium that lines most of the bronchial tree.

Name the epithelium of the pleural membranes.

Identify this space.

Mechanics of Breathing

Quiet exhalation is “passive”. Describe why air leaves the lungs.
Microscopic Anatomy of Lung Lobule

Describe the trends with respect to tissue organization (esp. the amount of smooth muscle and cartilage, and the type of epithelium) as you move into smaller branches of the bronchial tree.

The Respiratory Membrane

Describe the chemical nature of surfactant. What is its function? Why are there fixed macrophages in alveoli?
Factors that Affect the Rate of Diffusion Across a Membrane

This application of Fick’s Law involves one cell membrane.

Describe all of the layers involved in the diffusion of gasses across the respiratory membrane.

Respiratory Centers in the CNS

Identify the type of muscle tissue in respiratory muscles.

Explain why breathing is normally rhythmic and unconscious.

Can these muscles be voluntarily controlled? Explain how this is possible.
Regulation of Breathing

Describe the action of carbonic anhydrase in the respiratory centers.

How do chemical changes influence activity in the respiratory centers of the Pons?

... other factors?

Key:
- stimulates
- inhibits

Describe the action of carbonic anhydrase in the respiratory centers.