

RESPIRATORY SYSTEM

The respiratory system plays an essential role in maintaining an oxygen supply to the cells and removing carbon dioxide as a waste product from cell metabolism. The reading assignment for this section is Chapter 15. Respiration on pages 281-299 in the textbook.

Respiratory Organs - Anatomy and Physiology

1. Using fig. 15.1 p.282, trace the pathway of a oxygen molecule as it passes from the mouth to the lung alveoli. Put the following structures in order:

- _____ bronchioles
- _____ larynx
- _____ trachea
- _____ bronchi
- _____ mouth
- _____ pharynx
- _____ alveoli

2. Fill in the following chart describing the function of respiratory organs: (pp.281-86)

<i>Organ</i>	<i>Function</i>
a. larynx	_____
b. pharynx	_____
c. bronchi	_____
d. bronchioles	_____
e. trachea	_____
f. diaphragm	_____
g. ribs	_____

Types of Respiration

(p.287)

1. The chart below lists three types of respiration. Use the space provided to describe each process.

<i>Type of Respiration</i>	<i>Description of Process</i>
a. external respiration	_____
b. internal respiration	_____
c. cellular respiration	_____

Alveoli - Structure and Function

1. Explain how a alveoli structure is related to its function in respiration.
(pp. 285 .

Respiratory Organs Working Together

1. Describe the relationship of the lungs to the pleural membranes and the thoracic cavity. p. 288

Control of Breathing

1. Explain how the following control breathing:
(p. 290)
 - a. level of CO₂ in the blood
 - b. level of hydrogen ions in the blood
 - c. medulla oblongata of the brain
2. Describe how the medulla oblongata controls the depth of breathing.
(pp. 288)

The Mechanics of Breathing

Experience the mechanics of breathing. Place the your hands on your ribs and take a few deep breaths. Feel how the ribs move. Using the bathroom mirror, watch the movement of your ribs as you breath deeply. Lie down flat, place your hands on your abdomen and breath deeply with your abdomen rising during inhalation and falling during exhalation.

1. Using the following headings as your guide, describe the mechanics of inhalation: (pp. 288 . Note figure 15 (p. 288)
 - a. medulla signals diaphragm and rib muscles
 - b. diaphragm movement
 - c. rib cage movement
 - d. lung movement
 - e. air movement

2. Explain how the following factors affect the homeostatic control of rate and depth of breathing. (pp. 288)
 - a. level of CO₂
 - b. level of hydrogen ions in the blood
 - c. breathing rapidly
 - d. holding your breath

Gas Exchange

1. Explain how partial pressure of O₂ and CO₂ influence their transport at the: (pp. 290-2; fig. 15.9, p.292)
 - a. alveolus-capillary level
 - b. capillary-tissue level (non-lung)
2. Explain the role of the following in the transport of blood gases. (pp. 290)
 - a. oxyhemoglobin
 - b. carbamino hemoglobin
 - c. H₂CO₃
3. Explain the role of cilia in the respiratory tract, and explain how smoking would affect their operation. (pp. 284)

Respiratory Disorders

1. Describe some of the known consequences of cigarette smoke and environmental pollution on the respiratory tract. (pp. 284)

2. Identify the *causes, characteristics, and method of treatment* of the following diseases: (*Merk Manual and text pp. 293-5*)

bronchitis
emphysema
tuberculosis
pneumonia
pulmonary edema
pleurisy
bronchial asthma
common cold

laryngitis
cyanosis
hyperventilation
pneumothorax
respiratory acidosis
lung cancer
hay fever

Sample Exam Questions

1. Describe the events that occur during inspiration.
2. It is impossible to commit suicide by holding one's breath. Explain why.
3. Describe the role of hemoglobin in the transportation of oxygen and carbon dioxide.
4. Describe what would happen if the lung cavity were punctured?