LEARNING OBJECTIVES FOR
RESPIRATORY SYSTEM
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RESPIRATORY SYSTEM
1. List and briefly describe the four distinctive events of respiration?

Functional anatomy
2. What is the difference between the respiratory zone and the conducting zone?
3. Compare the structure and function of the external and internal nasal: include mucous membrane, external nares, internal nares, septum, hard and soft palates, and vestibule.
4. Where and what is the function of the paranasal sinuses?
5. Differentiate the three regions of the pharynx and describe their roles in respiration.
6. Describe the structure of the larynx and explain its function in respiration and voice production: include thyroid cartilage (Adam's apple), epiglottis, cricoid cartilage, vocal folds.
7. Explain the structure and function of the trachea: include ciliated pseudostratified columnar epithelium, C-shaped cartilage, smooth muscle.
8. Describe the location and structure of the tubes that form the conducting zone structures: include - trachea, primary bronchi, secondary bronchi, tertiary bronchi, bronchioles, and terminal bronchioles. What basic changes occur as the conduction tubes become smaller?
9. Describe the location and structure of the respiratory zone. Explain the structure of the respiratory membrane and its function in the diffusion of respiratory gases.
10. Describe the gross anatomy of the lungs. How many lobe does each lung have? Describe the broncho-pulmonary segment. Describe the blood supply to and away from lungs. Where are the pleurae located and what do they do?

Mechanics of Breathing
11. Describe intrapulmonary pressure and intrapleural pressure. What are two forces that act to pull the lungs away from the thorax? Define Boyle's law. What are two events for normal quiet inspiration? How does normal expiration occur?
12. What are two reasons why normal airway resistance is insignificant? What part of the lungs regulates resistance? What are two ways that bronchioles are triggered to constrict?
13. Define compliance. What are four ways compliance is diminished? What are two important aspects of lung elasticity? What are two aspects of surface tension? What is the function of surfactant?
14. Explain the following pulmonary air volumes and capacities: tidal volume, inspiratory reserve volume, inspiratory capacity, expiratory reserve volume, total lung capacity, vital capacity, minute respiratory volume, FVC, and FEV1.

Gas Exchange in the Body
15. Define Dalton's law. How does partial pressure relate to the diffusion of gases?
16. Define Henry's law. How does it relate to the type of gases which dissolves in the blood?
17. Define external and internal respiration. The partial pressures of oxygen and carbon dioxide cause their diffusion in which directions?

Transport of Respiratory Gases by Blood
18. Approximately how much oxygen is carried in the plasma and with hemoglobin? What is the difference between fully saturated and saturated hemoglobin? Name four factors which affect the association of oxygen with hemoglobin. How saturated is hemoglobin in arterial blood? What is the "venous reserve"? How does an increase in temperature affect oxygen unloading? How does a decrease in pH (increase of P CO2) affect oxygen unloading? What is molecular oxygen used for? Define hypoxia.
19. Discuss the transport of carbon dioxide in blood. Approximately how much carbon dioxide is carried in the plasma, with hemoglobin, and as the bicarbonate ion?
20. Describe the chloride shift.
21. Describe the influence of carbon dioxide on blood pH. What is the alkaline reserve? What happens to the bicarbonate ion when blood pH decreases? How do changes in respiratory rate influence blood pH?

Control of Respiration
22. Where is the inspiratory center (DRG)? What is its function? What nerves carry its motor output? Define eupnea. Where are the pneumotaxic and apneustic centers located?
23. Explain how cortical centers influence respiratory activity. Where is the major area for monitoring P CO2 (pH). What is the advantage of this area? What happens under the condition of hypercapnia? What happens under conditions of hypocapnia?
24. Where are the receptors for P O2 located?

LABORATORY
Complete Laboratory exercises #30 - 31. Complete #30 - 31 at www.linkpublishing.com/interactive%20exams.htm