

UNIT 4 STUDY QUESTIONS

1. Discuss the major functions of the respiratory system.
2. Describe the anatomy of the conducting portion, exchange portion and pleural cavities.
3. Discuss the intrapleural and intra-alveolar pressures at rest and how these forces counter lung elasticity.
4. Explain the mechanics of rhythmic and enhanced ventilation (breathing). Include muscles involved, volume changes and pressure changes.
5. Describe how compliance, surface tension, surfactant, and resistance influence ventilation.
6. Discuss the controls over ventilation include involuntary rhythmic breathing, changing the rate and depth, and voluntary controls.
7. Explain the concept of partial pressure and Dalton's Law. Know the partial pressure values.
8. Discuss the solubility of gases in liquids (blood) and how it depends upon concentration gradient, solubility and temperature (Henry's Law).
9. Discuss gas exchange using the partial pressures of oxygen and carbon dioxide and reasons why their values change between the atmosphere (inspired and expired air), alveoli, blood, and body tissues.
10. Discuss how oxygen is transported in the bloodstream.
11. Discuss the oxygen-hemoglobin saturation curve. Include the significance of the plateau region and the steep reserve region.
12. Describe how temperature, acidity and, BPG influences the affinity of oxygen for hemoglobin. Include where these changes occur in the body and their significance.
13. Discuss the three methods of transporting carbon dioxide in the bloodstream.
14. Discuss how changes in carbon dioxide levels shift the carbon dioxide-bicarbonate equilibrium.
15. Discuss the following respiratory disorders: asthma, chronic bronchitis, emphysema, pneumothorax, and pneumonia.
16. Discuss the overall functions of the urinary system.
17. Recall the urinary organs and describe kidney anatomy. Include nephrons and blood vessels.
18. Explain the process of filtration and how blood pressure, sympathetic nerves, and oncotic pressure regulate filtration.
19. List the amount of water, sodium, glucose, and urea filtered, reabsorbed, and percent reabsorption.
20. Discuss how glucose and amino acids are reabsorbed in the kidneys.
21. Discuss transport maximum and how this relates to urine glucose levels in normal and diabetic individuals.
22. Discuss how sodium is reabsorbed in the kidneys. Include regional differences and hormonal influences.

23. Discuss how water and urea are passively reabsorbed.
24. Discuss the process of secretion.
25. Discuss the basic spinal cord reflex of micturition and how the brain can postpone or initiate voiding.
26. Briefly discuss water input to and output from the body.
27. Briefly discuss how the kidney develops a concentrated medulla.
28. Discuss how the action of ADH on the collecting duct influences urine's osmotic concentration or salinity.
29. Describe the two homeostatic reflexes that influence water reabsorption.
30. Describe the reflex for regulating water filtration.
31. Describe the homeostatic reflex for sodium reabsorption. Include the renin-angiotensin-aldosterone system.
32. Discuss the functions and reflexes of atrial natriuretic peptide (ANP).
33. Discuss potassium homeostasis.
34. Discuss acid-base regulation in the body. Include buffers, respiratory system, and the excretory system.
35. Discuss the process of hydrogen ion secretion and bicarbonate reabsorption.
36. Discuss how hydrogen ion secretion and bicarbonate reabsorption are regulated when the body is too acidic or too alkaline.
37. Define acidosis and alkalosis and their respiratory and metabolic causes.