

## Anatomy & Physiology Module Exam Study Guide

- Relative speed of acid-base compensation mechanisms.
  - List the mechanisms for acid-base compensation
  - Compare the relative speed of action of the various mechanisms
- Route of blood flow through heart.
  - Trace the flow of blood through the heart beginning within the right atrium
  - Name all major anatomical components the blood passes through.
  - You may diagram the blood flow as long as all major anatomical components are noted on the diagram.
- Locations and functions of all endocrine glands.
  - Given a specific endocrine gland, list the hormone(s) produced by the gland, the target organ(s), and briefly state the principal action(s) of the hormone.
  - Applegate, p. 209 and Sanders, p. 148
- Relationship between  $H^+$  and pH.
  - Define pH
  - Describe the effect of Hydrogen ion concentration on pH
  - Compare pH values in terms of relative acidity/alkalinity as compared to neutral
  - Sanders, p. 228-230
- Layers of skin.
  - List the layers of the skin and note their relative locations to each other.
  - Sanders, p. 119
- Function of organs of skin.
  - List the major components of the skin (e.g. Hair, glands, etc.)
  - State the primary functions of the skin
  - Sanders, p. 119-120
- Blood components and function.
  - List the major types of blood components
  - Describe the primary function of each component
  - Sanders, p. 149-150
- Total blood volume.
  - List the relative volume concentrations for each major type of blood component.
  - Sanders, p. 149-150
- Components and function of each body system.
  - List the body systems and the principal components (organs) of each system
  - Briefly describe the primary functions of each body system
- Anatomic position and terms.
  - Given a description of a specific body position, state the anatomical terms used to describe this body position.
  - Sanders, p. 110-112
- Anatomic markers for each body cavity.
  - State the anatomical landmarks which create the boundaries for each body cavity.
  - List the major organs within each body cavity
  - Sanders, p. 110-112
- Names of membranes surrounding: heart, lungs, intestines, brain.
  - List the specific membranes that surround each of these organs: heart, lungs, intestines, and brain.

13. Structures of airway.
  - a. List the major components of the airway.
14. Lung capacities
  - a. Define each component of lung capacity
15. Gas transport
  - a. Describe and diagram the transfer of gases (respiration) at the pulmonary and systemic capillary beds
  - b. List the partial pressures of gases which create the gradient
16. Mechanics of ventilation.
  - a. Describe the actions that occur to allow ventilation
  - b. Include the organs and structures involved in these actions
  - c. Include brief discussions of pressure gradients resulting from volume increase
17. Regulation of respiration.
  - a. Describe the mechanisms that regulate respiration (transfer of gases)
18. Function and location (quadrant) of each abdominal organ.
  - a. See No. 10 above.
19. Components and function of cellular components.
  - a. List the principal cellular components
  - b. Describe the primary function of each component.
  - c. Sanders, p. 114
20. Cranial nerves: name and number.
  - a. List the cranial nerves and their corresponding cranial nerve number
  - b. Sanders, p. 144
21. Name and location of major blood vessels.
22. Name and location of major coronary vessels
  - a. List the major coronary vessels and their locations on the heart
  - b. State where coronary blood supply returns to the heart.
  - c. List the 5 main arteries and 1 vein that provide blood within the heart
23. Valves of heart.
  - a. List the names of the heart valves and their locations
24. Timing of valve openings and corresponding blood flow.
  - a. Describe the timing of opening and closing of the valves
  - b. Describe the blood flow through the heart as it relates to the opening and closing of the valves
25. Major structures and functions of brain: cerebrum, cerebellum, and medulla.
26. Major structures and functions of eye: retina, iris, sclera, and aqueous and vitreous humor.
27. Autonomic nervous system: neurotransmitters, receptors and effects of stimulation or blockage.
  - a.
28. Body water composition.
29. Electrolytes: major anions and cations; intra- and extra-cellular concentrations.
  - a. Describe the chief intra- and extra-cellular cations and their role in maintenance of membrane potentials
30. Methods of transport.
  - a. Define and differentiate osmosis and diffusion
  - b. Define active and passive transport
31. Tonicity and effects.

32. Acid-base derangements: causes and compensation mechanisms.
  - a. Describe the derangements (abnormalities) of acid-base balance.
  - b. List the causes of each abnormality and compensatory mechanisms associated with each.
33. PCO<sub>2</sub>, and pH: predictors of acid-base derangement.
  - a. Describe how PCO<sub>2</sub> and pH values are used to predict acid-base abnormalities.
34. Cardiac cycle: electrical and mechanical.
  - a. Discuss the relationship between the electrical and mechanical function of each phase of the cardiac cycle.
35. Phases of electrical cardiac cycle, including action potential, ion movement and refractory periods.
  - a. Diagram the 4 phases of cardiac depolarization and repolarization.
  - b. Label the direction of ion flow responsible for each phase.
  - c. Describe the time periods involved with one cardiac cycle.
  - d. Begin with atrial systole
  - e. Describe the significance of ventricular diastole (What is its purpose?)
  - f. State which phase decreases the most as heart rate increases, systole or diastole?
  - g. Define and differentiate between absolute and relative refractory periods.
36. Relationship between the following: preload, afterload, Frank Starling, and venous return.
  - a. Define preload, afterload and Starling's law
  - b. Describe the relationships between preload, afterload, Starling's law and venous return
37. Components of blood pressure.
  - a. Where is the highest pressure found in the cardiovascular system?
  - b. List the components of blood pressure and their mathematical relationship
  - c. List the components of cardiac output and their mathematical relationship
38. Blood Flow Mechanisms
  - a. Describe the mechanisms and pressure gradients responsible for blood flow
  - b. What are the mechanisms responsible for returning blood flow from the lower extremities?
39. Components of typical neuron.
  - a. Diagram a typical neuron and label the components of the neuron
40. Electrical conduction system of heart (ie, pacemakers).
  - a. What are the two types of cardiac cells?
  - b. Diagram the electrical conduction system and trace the path of electrical stimulus through the system
  - c. Label the major components of the electrical conduction system