

Module 09: Tissues and the Animal Body — Study Questions

1. What is homeostasis? Give an example of a condition the human body must keep perfectly balanced.
2. How does a negative feedback loop differ from a positive feedback loop? Provide a biological example of each.
3. Why is osmoregulation critical for human survival? What would happen to our cells if this failed?
4. Which organ system plays the largest role in maintaining water and salt balance (osmoregulation)?
5. What is the fundamental difference between mechanical digestion and chemical digestion?
6. Trace the path of food from the mouth to the large intestine, naming the primary function of each organ it passes through.
7. Why is the small intestine considered the most important organ for digestion and absorption?
8. The liver, pancreas, and gallbladder are "accessory organs." What does this mean, and what specific fluids do they contribute?
9. What are the three main types of blood vessels, and how does their structure match their function?
10. Trace the pathway of a red blood cell starting from the right atrium of the heart, to the lungs, and back to the left side of the heart.
11. Why is the left ventricle of the heart thicker and more muscular than the right ventricle?

12. Describe the process of gas exchange in the alveoli. What gas moves into the blood, and what gas moves out?
13. What is a hormone, and how does the endocrine system use hormones differently than how the nervous system uses electrical signals?
14. Choose two endocrine glands (e.g., pancreas, thyroid) and describe their primary function or the specific hormone they produce.
15. How does the pancreas use hormones to regulate blood sugar levels?
16. Which part of the brain acts as the primary link between the nervous system and the endocrine system?
17. Besides providing structural support and movement, what are two other critical functions of the human skeleton?
18. What is the difference between the axial skeleton and the appendicular skeleton?
19. Compare and contrast the three types of muscle tissue (skeletal, smooth, cardiac) in terms of their location and whether their movement is voluntary or involuntary.
20. Using an analogy of a lever, explain how skeletal muscles and bones interact to create movement.
21. What are the two main anatomical divisions of the nervous system, and what structures belong to each?
22. Draw or describe the basic structure of a neuron, including the dendrites, cell body, and axon.
23. What is the difference between a sensory neuron and a motor neuron?
24. **Challenge Question:** You touch a hot stove and immediately pull your hand away. Describe how the nervous, muscular, and skeletal systems worked together almost instantly to protect you from a severe burn.