

Reading Assignment & Essential Knowledge Questions

 **READING**...we are not required to cover all the chapters on the Human Body. Please **ONLY** read the noted chapters and sections below. Read them in the order they are noted.

Endocrine System (Chapter 45)

Read section 45.1, 45.3 (Posterior and Anterior Pituitary Hormones only), 45.4 (do not memorize the glands listed), 45.5 (read only Figure 45.15 and the text under it starting on page 960 and then read to the end of the chapter.

Nervous System (Chapter 48 and 49)

Read section 48.1 (starting on section titled "Neuron Structure" on page 1013), 48.2, 48.3, 48.4 (only to page 1024), 48.5 (pages 1031 & 1032), 48.7 ("Diseases and Disorders page 1039-1041), and 49.9 ("Sensory Transduction in the Eye" page 1060-1063)

Immune System (Chapter 43)

Read all of Chapter 43. There is no need to memorize the types of Antibodies listed on page 912 titled "Antibody Classes" and figure 43.18.

Essential Knowledge Questions

1. 4.A.4 Explain how the respiratory and circulatory systems coordinate to provide the body with essential nutrients such as OXYGEN, and rid the body of wastes such as CARBON DIOXIDE. (This is a biology level question)

ENDOCRINE

2. 2.C.1 Explain why, unlike negative feedback, positive feedback isn't a common feature of hormonal pathways that help maintain homeostasis.
3. 2.C.1 Which concept of hormonal control (negative or positive regulation) is characteristic of...
 - a. Prolactin (Lactation in mammals)
 - b. Adrenocorticotrophic hormone (ACTH)
 - c. Oxytocin (onset of labor in childbirth)
4. How do calcitonin and parathyroid hormone (PTH) maintain blood calcium levels? What type of hormonal control is this?
5. Juvenile hormone is sometimes used commercially as an insecticide. What effects does it have on insect populations? Explain.
6. 2.C.1 Explain the negative feedback loop that helps regulate body temperature in animals.
7. 2.C.1 Alteration in the mechanisms of feedback often results in disease or deleterious consequences. Explain how the "issues" that cause feedback to work incorrectly.
 - a. Diabetes mellitus in response to decreased insulin
 - b. Graves' disease (Hyperthyroidism)

NERVOUS

8. 3.E.2 Draw and label a neuron. THEN note how each structure of the neuron allowed for either detection, generation, transmission and integration of signal information (don't forget the Schwann cells that make up the myelin sheath)
9. Would severing a neuron's axon stop the neuron from receiving or from transmitting information? Explain.
10. What would be the most obvious structural abnormality in the nervous system of a mouse lacking oligodendrocytes?
11. 3.E.2 Summarize in a prompt paragraph how an action potentials propagate impulses along neurons.
12. Contrast ligand-gated and voltage-gated ion channels in terms of the stimuli that open them.
13. 3.E.2 How does an action potential differ from a graded potential?
14. Supposed a mutation caused the inactivation gates on Na⁺ channels to remain closed for a longer time following an action potential. How would that affect the maximum frequency at which action potentials could be generated?
15. 3.E.2 In most animals, transmission across synapses involves chemical messengers called neurotransmitters. Choose **two** of the neurotransmitters below and explain how they work to either stimulate or inhibit a response.
 - a. Acetylcholine
 - b. Epinephrine
 - c. Norepinephrine
 - d. Dopamine
 - e. Serotonin
 - f. GABA
16. 3.E.2 Cone snails produce a toxin that blocks voltage-gated calcium channels. Which of the two main types of synapses would be most affected by the toxin and why?
17. Organophosphate pesticides work by inhibiting acetylcholinesterase, the enzyme that breaks down the neurotransmitter acetylcholine. Explain how these toxins would affect ESPSs produced by acetylcholine.
18. 3.E.2 Compare the roles of the reticular formation and thalamus to the transmissions of sensory information to the cerebrum.
19. What evidence indicates that schizophrenia, bipolar disorder, and major depression have both genetic and environmental components?
20. What are some similarities between Alzheimer's disease and Parkinson's disease?
21. 3.E.2. Using chapter 49 as a guide note the location in the brain that controls each of the functions listed below.
 - a. Vision
 - b. Hearing
 - c. Muscle movement
 - d. Emotions
22. 3.E.2 For the eye...Concentrating on the vertical pathway through the retina, explain how illuminating a photoreceptor can lead to an increased frequency of action potentials in ganglion cells.

IMMUNE

23. Innate defenses are nonspecific. How, then, do macrophages recognize in infectious agent, such as a bacterium?
24. 2.D.4 State two ways in which the innate defenses or insects (invertebrates), vertebrates, and plants, are similar.

25. 2.D.4 What is the major difference in the types of antigens bound by B cell receptors and T cell receptors?
26. 2.D.4 Describe the main role of each of the following cells types, once it is activated by antigens and cytokines: helper T cell, cytotoxic T cell, and B cell.
27. Explain why passive immunization provides short-term protection from an infection, whereas active immunization provides long-term protection.
28. How would a macrophage deficiency likely affect a person's innate and acquired defenses?
29. 2.D.4 Contrast cell mediated and humoral immune response in mammals.
30. 2.D.4 Relate antigens and antibodies in a factually correct sentence.
31. 2.D.4 Why does a second exposure to an antigen result in a more rapid and enhanced immune response?