

## **Chapter 02: Homeostasis**

### **Patton: Anatomy and Physiology, 10th Edition**

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#### **MULTIPLE CHOICE**

1. Of the 11 major body systems, which is the least involved in maintaining homeostasis?
  - a. Circulatory
  - b. Endocrine
  - c. Lymphatic
  - d. Reproductive

ANS: D                      DIF: Application    REF: p. 25, Table 2-1  
TOP: Homeostatic Functions of Body Systems

2. *Homeostasis* can best be described as:
  - a. a constant state maintained by living and nonliving organisms.
  - b. a state of relative constancy.
  - c. adaptation to the external environment.
  - d. changes in body temperature.

ANS: B                      DIF: Application    REF: p. 31                      TOP: Homeostasis

3. The normal reading or range of normal is called the:
  - a. sensor point.
  - b. set point.
  - c. effector point.
  - d. integrator point.

ANS: B                      DIF: Memorization                      REF: p. 24  
TOP: Set Point

4. Which of the following is not one of the basic components in a feedback control loop?
  - a. Effector mechanism
  - b. Transmitter
  - c. Sensor
  - d. Integrating center

ANS: B                      DIF: Memorization                      REF: p. 27  
TOP: Basic Components of Control Mechanisms

5. The body's thermostat is located in the:
  - a. heart.
  - b. cerebellum.
  - c. pituitary.
  - d. hypothalamus.

ANS: D                      DIF: Memorization                      REF: p. 27  
TOP: Basic Components of Control Mechanisms

6. The contraction of the uterus during the birth of a baby is an example of \_\_\_\_\_ feedback.
  - a. negative

- b. positive
- c. inhibitory
- d. deviating

ANS: B                      DIF: Memorization  
TOP: Positive Feedback in Control Systems

REF: p. 29

7. Negative-feedback mechanisms:
- a. minimize changes in blood glucose levels.
  - b. maintain homeostasis.
  - c. are responsible for an increased rate of sweating when air temperature is higher than body temperature.
  - d. All of the above are correct.

ANS: D                      DIF: Memorization  
TOP: Negative Feedback in Control Systems

REF: p. 28

8. *Pathogenesis* can be defined as:
- a. a specific disease.
  - b. a group of diseases.
  - c. the course of disease development.
  - d. a subgroup of viruses.

ANS: C                      DIF: Memorization  
TOP: Disease Terminology

REF: p. 32

9. Intracellular parasites that consist of DNA or RNA surrounded by a protein coat and sometimes by a lipoprotein envelope are called:
- a. viruses.
  - b. bacteria.
  - c. fungi.
  - d. protozoa.

ANS: A                      DIF: Memorization  
TOP: Basic Mechanisms of Disease

REF: p. 34

10. The term that literally means self-immunity is:
- a. autoimmunity.
  - b. homoimmunity.
  - c. passive immunity.
  - d. active immunity.

ANS: A                      DIF: Memorization  
TOP: Basic Mechanisms of Disease

REF: p. 34

11. *Epidemiology* is the study of the \_\_\_\_\_ of diseases in human populations.
- a. occurrence
  - b. distribution
  - c. transmission
  - d. All of the above are correct.

ANS: D                      DIF: Memorization  
TOP: Disease Terminology

REF: p. 32

12. Which of the following may put one at risk for developing a given disease?
- a. Environment
  - b. Stress
  - c. Lifestyle
  - d. All of the above

ANS: D                      DIF: Memorization  
TOP: Basic Mechanisms of Disease

REF: pp. 34-35

13. Negative-feedback control systems:
- a. oppose a change.
  - b. accelerate a change.
  - c. have no effect on the deviation from set point.
  - d. establish a new set point.

ANS: A                      DIF: Memorization  
TOP: Negative Feedback in Control Systems

REF: p. 28

14. Positive-feedback control systems:
- a. have no effect on the deviation from set point.
  - b. accelerate a change.
  - c. ignore a change.
  - d. do not exist in human systems.

ANS: B                      DIF: Memorization  
TOP: Positive Feedback in Control Mechanisms

REF: p. 28

15. Shivering to try to raise your body temperature back to normal would be an example of:
- a. the body trying to maintain homeostasis.
  - b. a positive-feedback mechanism.
  - c. a negative-feedback mechanism.
  - d. both A and C.

ANS: D                      DIF: Synthesis      REF: p. 27  
TOP: Negative Feedback in Control Systems

16. Which of the following is a protein substance with no DNA or RNA and is thought to be the cause of mad cow disease?
- a. Virus
  - b. Bacteria
  - c. Prion
  - d. Protozoan

ANS: C                      DIF: Memorization  
TOP: Pathogenic Organisms

REF: p. 33

17. Of the pathogenic organisms, which of the following are the most complex?
- a. Viruses
  - b. Tapeworms
  - c. Bacteria
  - d. Protozoa

ANS: B                      DIF: Memorization  
TOP: Pathogenic Organisms

REF: p. 34

18. If the secretion of oxytocin during childbirth operated as a negative-feedback control loop, what effect would it have on uterine contractions?
- Oxytocin would stimulate stronger uterine contractions.
  - Oxytocin would inhibit uterine contractions.
  - There would be no changes in the strength of the uterine contractions.
  - Uterine contractions would initially be weak and then gain strength after the release of the hormone.

ANS: B                      DIF: Application    REF: p. 28  
TOP: Positive Feedback in Control Systems

19. Intrinsic control:
- usually involves the endocrine or nervous system.
  - operates at the cellular level.
  - is sometimes called *autoregulation*.
  - operates at the system or organism level.

ANS: C                      DIF: Memorization  
TOP: Levels of Homeostatic Control

REF: p. 31

## MATCHING

*Match each term with its corresponding definition or explanation*

- Prion
  - Tumor
  - Fungi
  - Gene mutation
  - Bacteria
  - Virus
  - Protozoa
- An intracellular parasite that consists of an RNA or DNA core surrounded by a protein coat
  - A type of protein that converts normal protein in the nervous system into abnormal proteins that cause loss of function
  - A tiny, primitive cell that lacks a nucleus and can cause infection
  - An abnormal growth or neoplasm
  - Altered DNA that causes abnormal proteins to be made that do not perform their intended function
  - A one-celled organism whose DNA is organized into a nucleus that can parasitize human tissue
  - Simple organisms that are similar to plants but lack chlorophyll, which allows plants to make their own food; because these organisms cannot make their own food, they parasitize human tissue

1. ANS: F                      DIF: Memorization  
TOP: Basic Mechanisms of Disease

REF: p. 34

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|----------------------------------|-------------------|------------|
| 2. ANS: A                        | DIF: Memorization | REF: p. 33 |
| TOP: Basic Mechanisms of Disease |                   |            |
| 3. ANS: E                        | DIF: Memorization | REF: p. 34 |
| TOP: Basic Mechanisms of Disease |                   |            |
| 4. ANS: B                        | DIF: Memorization | REF: p. 34 |
| TOP: Basic Mechanisms of Disease |                   |            |
| 5. ANS: D                        | DIF: Memorization | REF: p. 33 |
| TOP: Basic Mechanisms of Disease |                   |            |
| 6. ANS: G                        | DIF: Memorization | REF: p. 34 |
| TOP: Basic Mechanisms of Disease |                   |            |
| 7. ANS: C                        | DIF: Memorization | REF: p. 34 |
| TOP: Basic Mechanisms of Disease |                   |            |

## SHORT ANSWER

1. Diagram a homeostatic control mechanism, including the three basic components.

ANS:

Answers will vary.

DIF: Synthesis      REF: p. 26      TOP: Homeostatic Control Mechanisms

2. How does childbirth demonstrate positive feedback?

ANS:

Answers will vary.

DIF: Synthesis      REF: p. 29      TOP: Positive Feedback in Control Systems

3. Give an example of how categories of risk factors or predisposing conditions could overlap.

ANS:

Answers will vary.

DIF: Synthesis      REF: pp. 34-35      TOP: Basic Mechanisms of Disease

4. Explain the feed-forward control system, and give an example of one in the body.

ANS:

Answers will vary.

DIF: Application      REF: p. 34      TOP: Feed-Forward in Control Systems

## ESSAY

1. Give an example of a system, either living or nonliving, that is designed to maintain a relatively constant condition by using a negative-feedback mechanism. Explain briefly how the system works to accomplish this.

ANS:

Answers will vary.

DIF: Synthesis      REF: pp. 28-29      TOP: Basic Components of Control Mechanisms

2. Explain how your set point can change under varying circumstances.

ANS:

Answers will vary

DIF: Synthesis      REF: pp. 29-30      TOP: Changing the Set Point