
Chapter 02: Homeostasis
Patton: Anatomy and Physiology, 11th Edition

MULTIPLE CHOICE

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

ANS: D DIF: Application TOP: Homeostatic Functions of Body Systems

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

ANS: B DIF: Application TOP: Homeostasis

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

ANS: B DIF: Memorization TOP: Set Point

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

ANS: B DIF: Memorization
TOP: Basic Components of Control Mechanisms

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

ANS: D DIF: Memorization
TOP: Basic Components of Control Mechanisms

6. The contraction of the uterus during the birth of a baby is an example of _____ feedback.
- negative
 - positive
 - inhibitory

d. deviating

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

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

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

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

ANS: C DIF: Memorization
TOP: Disease Terminology

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

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

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

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

11. *Epidemiology* is the study of the of _____ diseases in human populations.
- occurrence
 - distribution
 - transmission
 - All of the above are correct.

ANS: D DIF: Memorization
TOP: Disease Terminology

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

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

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

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 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

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

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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 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

SHORT ANSWER

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

ANS:
Answers will vary.

DIF: Synthesis TOP: Homeostatic Control Mechanisms

2. How does childbirth demonstrate positive feedback?

ANS:
Answers will vary.

DIF: Synthesis 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 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 TOP: Feed-Forward in Control Systems

MATCHING

Match each term with its corresponding definition or explanation

- a. Prion
 - b. Tumor
 - c. Fungi
 - d. Gene mutation
 - e. Bacteria
 - f. Virus
 - g. Protozoa
-
- 1. An intracellular parasite that consists of an RNA or DNA core surrounded by a protein coat
 - 2. A type of protein that converts normal protein in the nervous system into abnormal proteins that cause loss of function
 - 3. A tiny, primitive cell that lacks a nucleus and can cause infection
 - 4. An abnormal growth or neoplasm
 - 5. Altered DNA that causes abnormal proteins to be made that do not perform their intended function
 - 6. A one-celled organism whose DNA is organized into a nucleus that can parasitize human tissue
 - 7. 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
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- 1. ANS: F DIF: Memorization
TOP: Basic Mechanisms of Disease
 - 2. ANS: A DIF: Memorization
TOP: Basic Mechanisms of Disease
 - 3. ANS: E DIF: Memorization
TOP: Basic Mechanisms of Disease
 - 4. ANS: B DIF: Memorization
TOP: Basic Mechanisms of Disease
 - 5. ANS: D DIF: Memorization
TOP: Basic Mechanisms of Disease
 - 6. ANS: G DIF: Memorization
TOP: Basic Mechanisms of Disease
 - 7. ANS: C DIF: Memorization
TOP: Basic Mechanisms of Disease

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

TOP: Basic Components of Control Mechanisms

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

ANS:

Answers will vary

DIF: Synthesis TOP: Changing the Set Point

Chapter 03: Chemistry of Life
Patton: Anatomy and Physiology, 11th Edition

MULTIPLE CHOICE

1. Which of the following represents a trace element in the body?
- Sulfur
 - Chlorine
 - Iron
 - Phosphorus

ANS: C DIF: Memorization
TOP: Elements and Compounds

2. The kind of element is determined by the number of:
- protons.
 - neutrons.
 - mesotrons.
 - electrons.

ANS: A DIF: Application TOP: Atomic Number and Mass Number

3. Atomic mass is determined by the number of:
- protons and electrons.
 - neutrons and electrons.
 - neutrons, protons, and electrons.
 - protons and neutrons.

ANS: D DIF: Application TOP: Atomic Number and Mass Number

4. Carbon has an atomic number of 6. The number of electrons found in the first shell is:
- two.
 - four.
 - six.
 - eight.

ANS: A DIF: Application TOP: Energy Levels

5. The atomic number of carbon is 6. How many unpaired electrons are in its outer shell?
- Two
 - Three
 - Four
 - Five

ANS: C DIF: Application TOP: Energy Levels

6. A negatively charged subatomic particle that moves around the nucleus is a(n):
- orbital.
 - proton.
 - neutron.
 - electron.

ANS: D DIF: Memorization TOP: Atomic Structure

7. When atoms combine, they may gain, lose, or share:
- electrons.
 - protons.
 - neutrons.
 - nuclei.

ANS: A DIF: Application TOP: Attractions Between Atoms

8. An ionic bond is formed by:
- two or more positive ions combining.
 - two or more negative ions combining.
 - a positive and a negative ion attracting each other.
 - sharing of a pair of electrons.

ANS: C DIF: Application TOP: Ionic Bonds

9. An example of an element would be:
- Ne.
 - CO₂.
 - C₆H₁₂O₆.
 - H₂O.

ANS: A DIF: Application TOP: Elements and Compounds

10. An isotope of an element contains different numbers of _____ from other atoms of the same element.
- electrons
 - protons
 - neutrons
 - both protons and neutrons

ANS: C DIF: Application TOP: Isotopes

11. The study of metabolism includes examination of:
- catabolism.
 - anabolism.
 - ATP requirements.
 - all of the above.

ANS: D DIF: Memorization TOP: Metabolism

12. An example of a catabolic process is:
- hydrolysis.
 - dehydration synthesis.
 - formation of a peptide bond.
 - both B and C.

ANS: A DIF: Memorization TOP: Metabolism

13. Which of the following elements is least likely to combine with another element?

-
- a. Hydrogen
 - b. Helium
 - c. Oxygen
 - d. Carbon

ANS: B DIF: Synthesis
TOP: Attractions Between Atoms—Chemical Bonds

14. The hydrogen isotope *tritium* consists of:
- a. one proton.
 - b. one proton and one neutron.
 - c. two protons and one neutron.
 - d. one proton and two neutrons.

ANS: D DIF: Application TOP: Isotopes

15. Which of the following bonds are the weakest?
- a. Ionic
 - b. Hydrogen
 - c. Electrovalent
 - d. Covalent

ANS: B DIF: Memorization TOP: Hydrogen Bonds

16. The type of reaction in which substances are combined to form more complex substances is called a(n)_____reaction.
- a. reversible
 - b. exchange
 - c. synthesis
 - d. decomposition

ANS: C DIF: Memorization TOP: Chemical Reactions

17. The process of the digestion of food is an example of which type of reaction?
- a. Synthesis
 - b. Decomposition
 - c. Exchange
 - d. Reversible

ANS: B DIF: Application TOP: Chemical Reactions

18. Substances that accept hydrogen ions are called:
- a. acids.
 - b. bases.
 - c. buffers.
 - d. salts.

ANS: B DIF: Memorization TOP: Bases

19. Acids:
- a. are proton donors.
 - b. taste sour.

- c. release hydrogen ions in an aqueous solution.
- d. All of the above are true of acids.

ANS: D DIF: Synthesis TOP: Acids

20. A solution that contains a greater concentration of hydroxide ions (OH^-) than hydrogen ions (H^+) is a(n)_____solution.
- a. acidic
 - b. alkaline (basic)
 - c. neutral
 - d. Not enough information is given to determine the character of the solution.

ANS: B DIF: Application TOP: Bases

21. In the presence of a base, red litmus paper will:
- a. stay red.
 - b. turn blue.
 - c. turn green.
 - d. turn yellow.

ANS: B DIF: Memorization TOP: Acids and Bases

22. The most abundant and important compound(s) in the body is(are):
- a. air.
 - b. water.
 - c. proteins.
 - d. nucleic acids.

ANS: B DIF: Memorization TOP: Water

23. Approximately what percentage of the body weight of an adult is water?
- a. 40%
 - b. 50%
 - c. 60%
 - d. 70%

ANS: B DIF: Memorization TOP: Water

24. $\text{AB} + \text{CD} \rightarrow \text{AD} + \text{CB}$ is an example of a(n)_____ reaction.
- a. synthesis
 - b. exchange
 - c. decomposition
 - d. reversible

ANS: B DIF: Application TOP: Chemical Reactions

25. Which of the following represents properties of water?
- a. High specific heat
 - b. High heat of vaporization
 - c. Strong polarity
 - d. All of the above