TEST BANK

Animal Physiology

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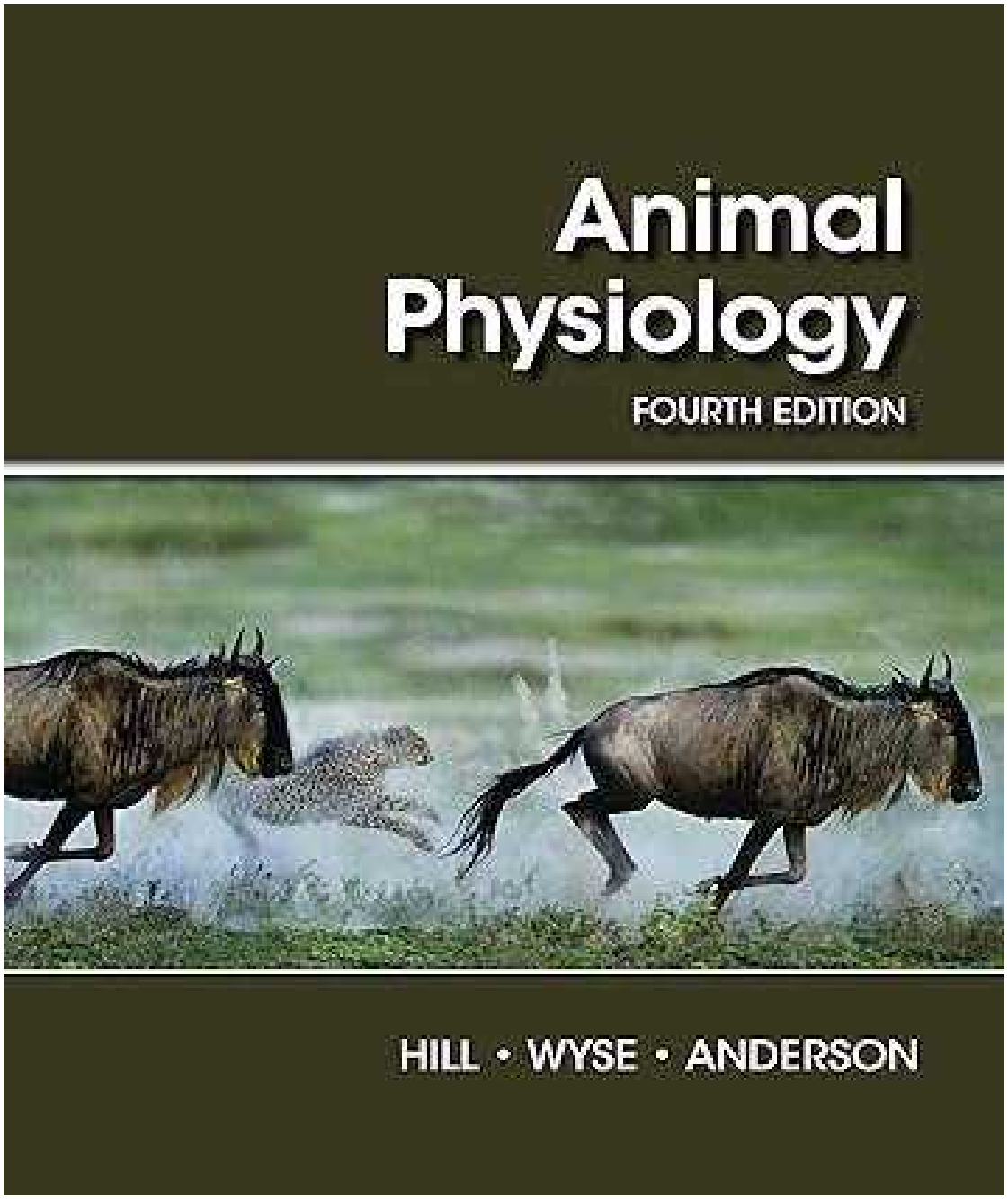
4th Edition



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Test Bank

to accompany
Animal Physiology, Fourth Edition
Hill • Wyse • Anderson

Chapter 1: Animals and Environments: Function on the Ecological Stage

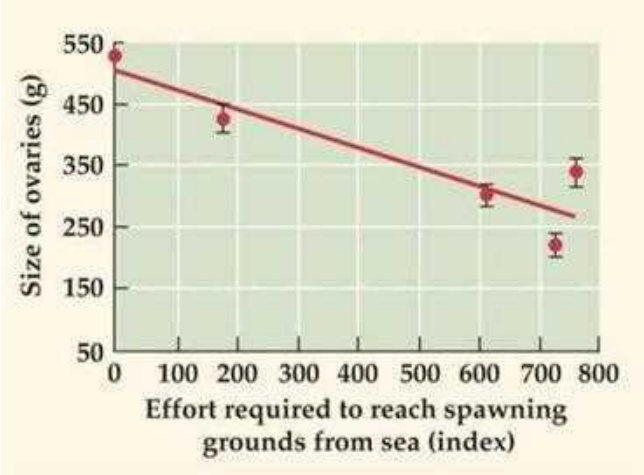
TEST BANK QUESTIONS

Multiple Choice

1. Which statement about the discipline of physiology is *false*?
a. It is a key discipline for understanding how animals change over Earth's history.
b. It is a key discipline for understanding the fundamental biology of all animals.
c. It is a key discipline for understanding human health and disease.
d. It is a key discipline for understanding the health and disease of nonhuman animals.
Answer: a
Textbook Reference: The Importance of Physiology
Bloom's Category: 5. Evaluating

2. To understand how a fish propels itself by applying forces to the water, physiologists would study its
a. biomechanics.
b. evolution.
c. ecology.
d. cell physiology.
Answer: a
Textbook Reference: The Highly Integrative Nature of Physiology
Bloom's Category: 2. Understanding

3. The data in the graph below would be relevant to which subdiscipline of physiology?



a. Evolution
b. Cell physiology
c. Morphology
d. Ecology
Answer: d
Textbook Reference: The Highly Integrative Nature of Physiology
Bloom's Category: 2. Understanding

4. In the study of physiology, the term "_____" refers to the components of living animals and the interactions among those components that enable animals to perform as they do.
a. feedback
b. regulation
c. natural selection
d. mechanism
Answer: d
Textbook Reference: Mechanism and Origin: Physiology's Two Central Questions
Bloom's Category: 1. Remembering

5. How is the light reaction in the firefly inhibited?
a. Mitochondria prevent oxygen from reacting with luciferyl-AMP.
b. Nitric oxide combines with oxygen to prevent reaction with luciferyl-AMP.
c. ATP is prevented from combining with luciferin.
d. Luciferase is prevented from catalyzing the reaction.
Answer: a
Textbook Reference: Mechanism and Origin: Physiology's Two Central Questions
Bloom's Category: 2. Understanding

6. Which of the following is *not* needed in the mechanism of light production in the firefly?
a. Oxygen
b. ATP
c. Light
d. Luciferin
Answer: c
Textbook Reference: Mechanism and Origin: Physiology's Two Central Questions
Bloom's Category: 2. Understanding

7. In the firefly, light is emitted when
a. ATP combines with luciferin, forming luciferyl-AMP.
b. released nitric oxide blocks the mitochondria's use of oxygen.
c. the electron-excited product of O_2 and luciferyl-AMP returns to its ground state.
d. luciferase is activated by oxygen.
Answer: c
Textbook Reference: Mechanism and Origin: Physiology's Two Central Questions

Bloom's Category: 5. Evaluating

8. Which of the following is considered the "on" switch for the light-emitting reaction of the firefly?
a. Oxygen
b. Luciferase
c. Nitric oxide
d. ATP
Answer: c
Textbook Reference: Mechanism and Origin: Physiology's Two Central Questions
Bloom's Category: 3. Applying

9. A physiological mechanism or other trait that is a product of evolution and is advantageous is called
a. an adaptation.
b. natural selection.
c. adaptive significance.
d. evolution.
Answer: a
Textbook Reference: Mechanism and Origin: Physiology's Two Central Questions
Bloom's Category: 1. Remembering

10. What is the adaptive significance of light emission in the firefly?
a. Female fireflies emit light in such a way that distinguishes their species.
b. All fireflies emit light to lure prey.
c. Male fireflies emit light to attract mates.
d. Male fireflies emit light to evade predators.
Answer: c
Textbook Reference: Mechanism and Origin: Physiology's Two Central Questions
Bloom's Category: 2. Understanding

11. Which of the following is a similarity between an octopus and a fish?
a. The evolutionary adaptation of excellent vision
b. The mechanism of vision
c. The processing of visual signals before reaching the optic nerve
d. The neuroanatomy of the eye
Answer: a
Textbook Reference: Mechanism and Origin: Physiology's Two Central Questions
Bloom's Category: 5. Evaluating

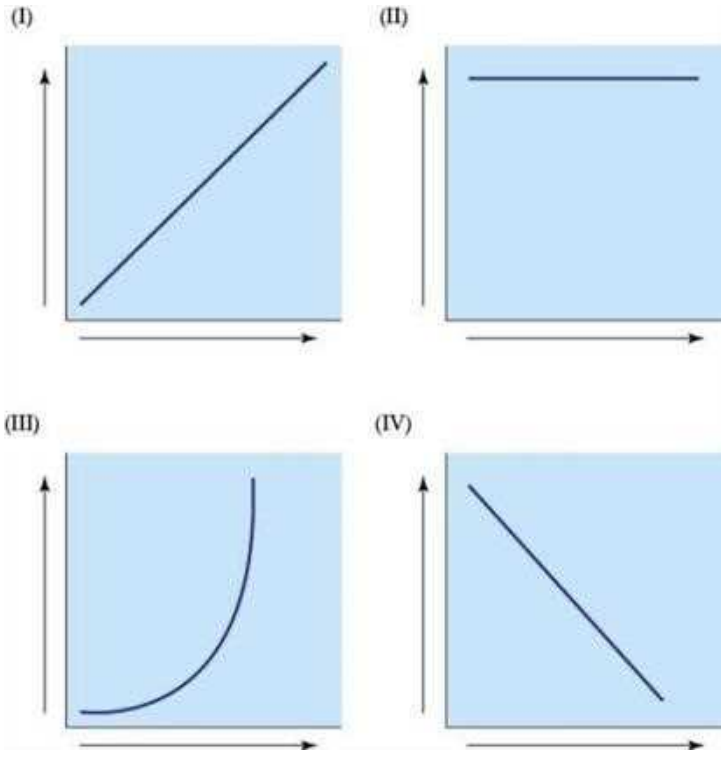
12. Research in the field of _____ physiology emphasizes synthesis across levels of biological organization.
a. evolutionary
b. comparative
c. environmental
d. integrative

Answer: d
Textbook Reference: This Book's Approach to Physiology
Bloom's Category: 2. Understanding

13. Which statement regarding animals is true?
a. There is no distinction between an animal and its environment.
b. Once adults, animals are structurally static.
c. All animals require energy to maintain their organization.
d. Body size is significant in the lives of only small animals.
Answer: c
Textbook Reference: Animals
Bloom's Category: 5. Evaluating

14. Most cells of an animal
a. are exposed to the external environment.
b. are exposed to the internal environment.
c. fluctuate between exposure to the external environment and the internal environment.
d. turn over while being exposed to the internal environment.
Answer: b
Textbook Reference: Animals
Bloom's Category: 2. Understanding

15.–17. Refer to the figures below.



15. Which figure refers to a physiological trait that is regulated by an organism?

a. I
b. II
c. III
d. IV
Answer: b
Textbook Reference: Animals
Bloom's Category: 3. Applying

16. A migrating salmon regulates its internal Cl^- concentration, shown in figure _____, while conforming to water temperature, shown in figure _____.
a. I; II
b. II; I
c. II; IV
d. I; III
Answer: b
Textbook Reference: Animals
Bloom's Category: 4. Analyzing

17. Figure _____ shows an animal's regulation of its body temperature as the external temperature increases. Figure _____ shows no regulation of its body temperature as external temperature increases.
a. I; II
b. II; I
c. II; IV
d. II; III
Answer: b
Textbook Reference: Animals
Bloom's Category: 3. Applying

18. Which statement regarding physiological conformity and regulation is true?
a. All animals will eventually conform.
b. Animals are either regulators or conformers.
c. An animal cannot be both an ion regulator and a temperature conformer.
d. Conforming is more metabolically expensive than regulating.
Answer: a
Textbook Reference: Animals
Bloom's Category: 5. Evaluating

19. The functioning of regulatory mechanisms that automatically make adjustments to maintain internal constancy is called
a. conformity.
b. feedback.
c. homeostasis.
d. regulation.
Answer: c
Textbook Reference: Animals

Bloom's Category: 1. Remembering

20. During childbirth, muscular contractions acting to expel the fetus from the uterus induce hormonal signals that induce even more intense contractions. This is an example of
a. homeostasis.
b. negative feedback.
c. a set point.
d. positive feedback.
Answer: d
Textbook Reference: Animals
Bloom's Category: 2. Understanding

21. Physiological changes that occur by alteration of gene frequencies over the course of many generations are referred to as _____ changes.
a. acute
b. chronic
c. evolutionary
d. developmental
Answer: c
Textbook Reference: Animals
Bloom's Category: 2. Understanding

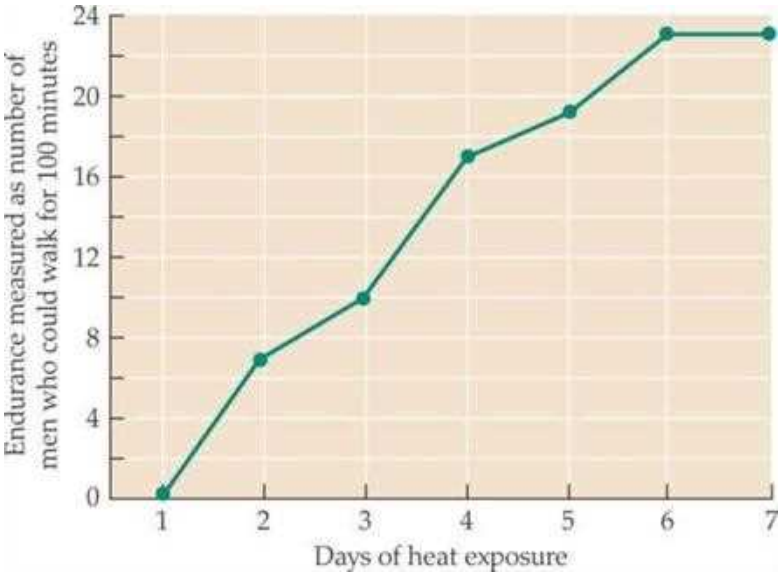
22. _____ is an example of "abandoning constancy" during thermoregulation.
a. Sweating
b. Shivering
c. Hibernating
d. Huddling
Answer: c
Textbook Reference: Animals
Bloom's Category: 3. Applying

23. What is the principal advantage of conformity?
a. The process requires a large amount of energy.
b. It allows cells to maintain a steady state.
c. Very little energy is used by this process.
d. Cells are subject to changes in their conditions.
Answer: c
Textbook Reference: Animals
Bloom's Category: 2. Understanding

24. Sweating in response to heat is an example of a(n)
a. acute change.
b. chronic change.
c. evolutionary change.
d. developmental change.

Answer: a
Textbook Reference: Animals
Bloom's Category: 2. Understanding

25.–26. Refer to the figure below.



25. What type of physiological response does the figure refer to?
a. Chronic response
b. Acute response
c. Evolutionary response
d. Developmental response
Answer: a
Textbook Reference: Animals
Bloom's Category: 3. Applying

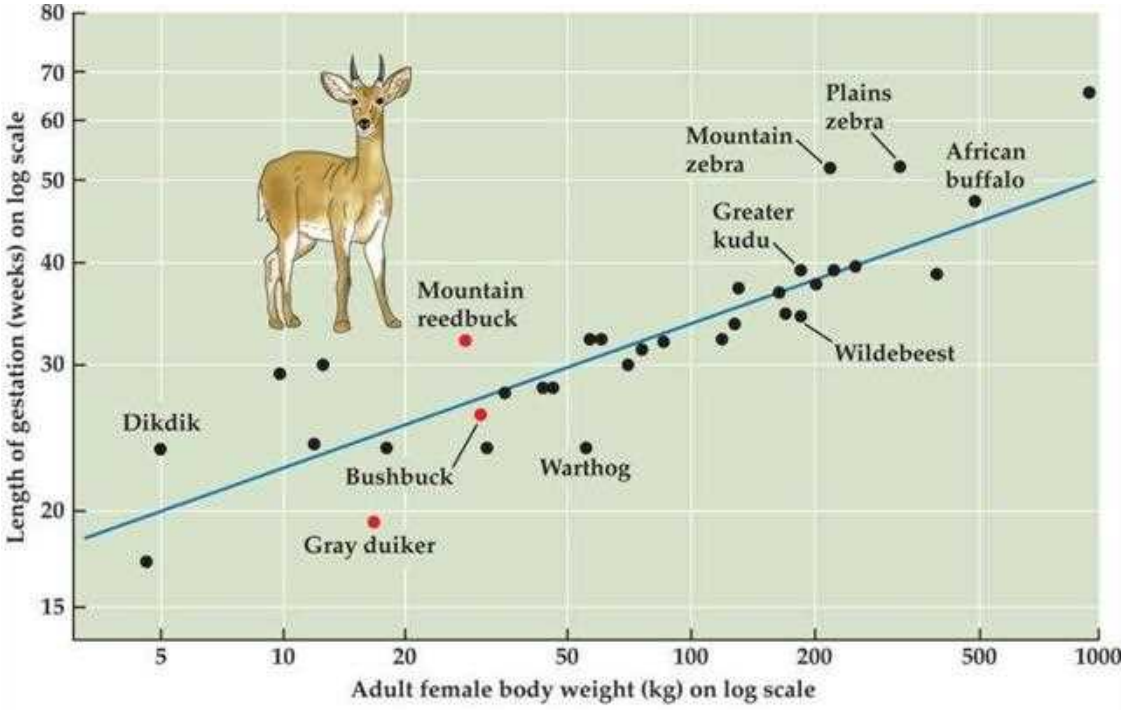
26. If the heat exposure were removed, the line in the diagram would
a. continue to show a plateau.
b. drop sharply.
c. gradually drop to its initial starting point.
d. drop but be maintained somewhere at the middle level.
Answer: c
Textbook Reference: Animals
Bloom's Category: 4. Analyzing

27. Which response is the longest lasting?
a. Acute response
b. Chronic response
c. Evolutionary response
d. Developmental response
Answer: c

Textbook Reference: Animals
Bloom's Category: 2. Understanding

28. Rainbow trout captured and brought into a lab aquarium undergo a chronic adjustment to the conditions in the lab. This process is called
a. phenotypic plasticity.
b. feedback inhibition.
c. acclimatization.
d. acclimation.
Answer: d
Textbook Reference: Animals
Bloom's Category: 2. Understanding

29.–31. Refer to the figure below.



29. What statistical method was used to draw the trend line in the figure?
a. Phylogenetically independent contrasts
b. Ordinary least squares regression
c. Weight-specific mean
d. Logarithmic scaling
Answer: b
Textbook Reference: Animals
Bloom's Category: 3. Applying

30. According to the figure, what is the expected gestation period of a warthog?
a. 20 weeks

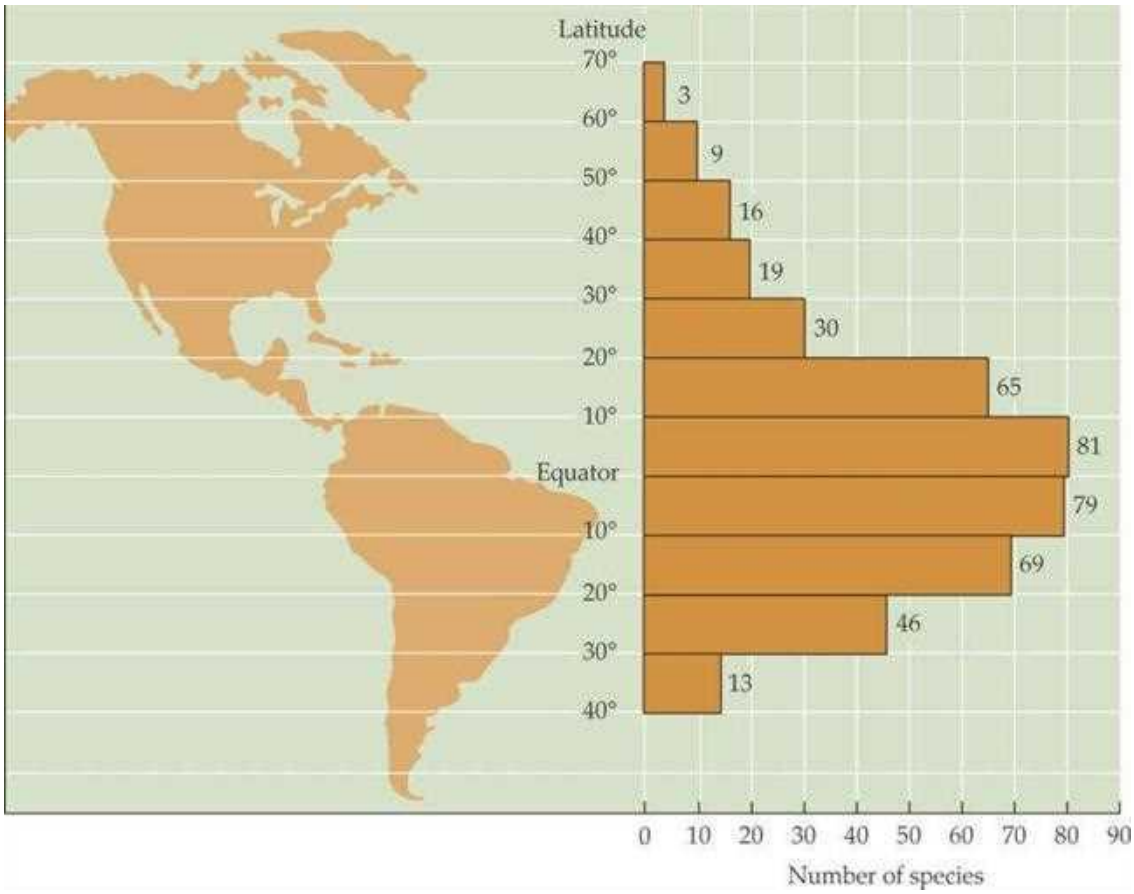
b. 24 weeks
c. 30 weeks
d. 55 weeks
Answer: c
Textbook Reference: Animals
Bloom's Category: 3. Applying

31. Which species in the figure shows an actual gestation period that is furthest from its expected gestation period?
a. Bushbuck
b. Dikdik
c. Warthog
d. Mountain zebra
Answer: d
Textbook Reference: Animals
Bloom's Category: 3. Applying

32. Which statement regarding the Antarctic fish species rock cod is *false*?
a. Some species have no hemoglobin.
b. The fish metabolically synthesize antifreeze to keep from freezing.
c. The fish live their entire lives at body temperatures near –1.6°C.
d. If acclimated slowly enough, the fish can survive in tropical waters.
Answer: d
Textbook Reference: Environments
Bloom's Category: 5. Evaluating

33. _____ can tolerate a body temperature of _____, one of the highest body temperatures recorded for any vertebrate animal.
a. Humans; 50°C
b. Thermophilic archaea; 100°C
c. The desert iguana; 48.5°C
d. Sea stars; 45.5°C
Answer: c
Textbook Reference: Environments
Bloom's Category: 1. Remembering

34.–35. Refer to the figure below.



34. This figure shows that
a. the number of butterfly species increases as one moves toward the equator.
b. butterfly populations are larger near the equator than at any other latitude.
c. the number of butterfly species increases as latitude increases.
d. the butterfly population increases as latitude increases.
Answer: a
Textbook Reference: Environments
Bloom's Category: 3. Applying

35. The environmental factor that is most responsible for the data shown in the figure is
a. sunlight.
b. food.
c. temperature.
d. water.
Answer: c
Textbook Reference: Environments
Bloom's Category: 4. Analyzing

36. In which habitat would O_2 concentration most likely be the lowest?
a. A subnivean air space
b. An open meadow at 4000 m elevation
c. The bottom of a waterfall