



Practice Midterm Exam

Raven, Berg, Hassenzahl: Environment, 7th Edition
Chapter 04: Ecosystems and Living Organisms

1. The theory of evolution by natural selection was proposed in, *The Origin of Species by Means of Natural Selection* (1859) written by:
- a) G. F. Gause
 - b) Rachel Carson
 - c) Ponce de Leon
 - d) Charles Darwin
 - e) Aristotle

Ans: d

Difficulty: Easy

Response:

Evolution: How Populations Change Over Time; Natural Selection; 4.1.1

2. Individuals within a population each have a unique combination of traits due to:
- a) overproduction
 - b) evolution
 - c) genetic variation
 - d) differential reproductive success
 - e) natural selection

Ans: c

Difficulty: Easy

Response:

Evolution: How Populations Change Over Time; Natural Selection; 4.1.1

3. The mechanism of natural selection involves all of the following except:
- a) overproduction within a species
 - b) limits on population growth
 - c) genetic variation
 - d) differential reproductive success
 - e) a stable community structure

Ans: e

Difficulty: Easy

Response:

Evolution: How Populations Change Over Time; Natural Selection; 4.1.1



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4. Which of the following organisms has no demonstrated relationship to the potential occurrence of Lyme disease?
- a) gray wolves
 - b) acorns
 - c) white-footed mice
 - d) deer
 - e) gypsy moths

Ans: a

Difficulty: Easy

Response:

Biological Communities; Community Interactions in an Oak Forest; 4.2.1

5. Which of the following characteristics would easily identify a prokaryotic organism?
- a) lack a nuclear envelope and other internal cell membranes.
 - b) able to photosynthesize
 - c) multicellular
 - d) ingest food and then digest it within their bodies
 - e) only found in oxygen-deficient environments

Ans: a

Difficulty: Easy

Response:

Evolution: How Populations Change Over Time; Evolution of Biological Diversity: The Domains and Kingdoms of Life; 4.1.3

6. Which of the following characteristics is used to identify members of the Kingdom Animalia?
- a) lack a nuclear envelope and other internal cell membranes.
 - b) use radiant energy to synthesize organic molecules
 - c) ingest food and digest it internally
 - d) secrete digestive enzymes into their food and then absorb the pre-digested nutrients
 - e) locomotion

Ans: c

Difficulty: Easy

Response:

Evolution: How Populations Change Over Time; Evolution of Biological Diversity: The Domains and Kingdoms of Life; 4.1.3

7. Symbiosis is the result of coevolution. Coevolution is the result of the interdependent evolution of:
- a) two interacting species
 - b) similar organisms whose members freely interbreed in the wild
 - c) a single species producing more offspring than will survive
 - d) species that lack a nuclear membrane and other internal cell membranes
 - e) two individuals within a single species

Ans: a

Difficulty: Easy

Response:

Biological Communities; Symbiosis; 4.2



Practice Midterm Exam

8. Which of the following is an area where primary succession is likely to occur?
- a) a sand dune along a lakeshore
 - b) an area that has been clear-cut
 - c) an area that was recently burned
 - d) an abandoned field
 - e) an area cleared by a tornado

Ans: a

Difficulty: Easy

Response:

Community Development; Primary Succession; 4.4.1

9. Which of the following organisms would be members of a pioneer community on bare rock?
- a) grass
 - b) lichens
 - c) herbs
 - d) moss
 - e) trees

Ans: b

Difficulty: Easy

Response:

Community Development; Primary Succession; 4.4.1

10. Which of the following represents the sequence of primary succession on a sand dune?
- a) lichens mosses grasses shrubs trees
 - b) crabgrass weeds oak trees pine trees
 - c) crabgrass horseweed weeds pine trees hardwood trees
 - d) grasses shrubs poplars pine trees oak trees
 - e) grasses shrubs pine trees poplars hardwood trees

Ans: d

Difficulty: Easy

Response:

Community Development; Primary Succession; 4.4.1

11. Secondary succession:
- a) leads to a stable, persistent community
 - b) reaches completion in about 15 years
 - c) occurs in areas lacking vegetation where soil is present
 - d) typically begins with lichens
 - e) would occur on a sand dune

Ans: c

Difficulty: Easy

Response:

Community Development; Secondary Succession; 4.4.2



Practice Midterm Exam

12. Keystone species:

- a) are only found in aquatic habitats
- b) are always found at the top of the food chain
- c) are usually not the most abundant species in the ecosystem
- d) are vital to the soil balance of an entire ecosystem
- e) are typically symbiotic

Ans: c

Difficulty: Easy

Response:

Biological Communities; Keystone Species; 4.2.6

13. Which of the following is an example of a keystone species?

- a) deer
- b) wolves
- c) elk
- d) rodents
- e) all of these are keystone species

Ans: b

Difficulty: Easy

Response:

Biological Communities; Keystone Species; 4.2.6

14. The aquatic community of Lake Victoria:

- a) has been stable for the past 200 years
- b) includes approximately 400 species of cichlids
- c) has been markedly altered by the introduction of an invasive species, the Nile perch
- d) has been altered by decreased nutrient input due to changes in the terrestrial habitat surrounding the lake
- e) continues to support extensive local fisheries featuring a wide diversity of species

Ans: c

Difficulty: Easy

Response:

Species Richness in a Community; Case in Point: Species Richness in Lake Victoria; 4.3.2

15. The interdependent evolution of two interacting species is known as:

- a) natural selection
- b) ecology
- c) coevolution
- d) mutualism
- e) herbivory

Ans: c

Difficulty: Easy

Response:

Biological Communities; Symbiosis; 4.2.4



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16. An organism's role, or lifestyle, within the structure of an ecosystem is its:

- a) habitat
- b) trophic level
- c) symbiotic relationship
- d) ecological niche
- e) limiting resource

Ans: d

Difficulty: Easy

Response:

Biological Communities; The Ecological Niche; 4.2.2

17. An ecological description of a species typically includes:

- a) whether it is a producer, consumer, or decomposer
- b) the kinds of symbiotic associations it forms
- c) whether it is a predator and/or prey
- d) what species it competes with
- e) all of these

Ans: e

Difficulty: Easy

Response:

Biological Communities; The Ecological Niche; 4.2.2

18. Which of the following characterizes a symbiotic relationship?

- a) a close interrelationship where both species benefit
- b) a close interrelationship where one species benefits and the other is not affected
- c) a close interrelationship where one species benefits and the other is adversely affected
- d) an intimate relationship between members of two or more species
- e) all of these

Ans: e

Difficulty: Easy

Response:

Biological Communities; Symbiosis; 4.2.4

19. Mycorrhizae help plants:

- a) to absorb water
- b) to convert atmospheric nitrogen into nitrates
- c) to repel insects
- d) to resist disease organisms
- e) to absorb essential nutrient minerals

Ans: e

Difficulty: Easy

Response:

Biological Communities; Symbiosis; 4.2.4



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20. In a parasitic relationship where the host contracts a disease and sometimes dies, the parasite is called a(n):
- a) predator
 - b) keystone species
 - c) mutualistic symbiont
 - d) interspecific competitor
 - e) pathogen

Ans: e

Difficulty: Easy

Response:

Biological Communities; Symbiosis; 4.2.4

21. Predation can be defined as:
- a) two or more individuals attempting to use an essential common resource
 - b) one organism consuming another organism, which may be a plant or animal
 - c) organisms living together
 - d) a relationship where one organism benefits and the other is not affected
 - e) a relationship that only exerts selective (evolutionary) force on the prey

Ans: b

Difficulty: Easy

Response:

Biological Communities; Predation; 4.2.5

22. Competition occurs when:
- a) one organism, the predator, attempts to consume another, the prey
 - b) two species in different habitats have similar niches
 - c) two or more species attempt to use an essential common resource
 - d) two or more species have an ecological relationship
 - e) symbiotic organisms interact

Ans: c

Difficulty: Easy

Response:

Biological Communities; Competition; 4.2.3

23. All of the following are examples of mutualism except:
- a) reef-building corals and zooxanthellae
 - b) nitrogen-fixing bacteria and legumes
 - c) trees and epiphytes
 - d) flowers and bees
 - e) mycorrhizae

Ans: c

Difficulty: Medium

Response:

Biological Communities; Symbiosis; 4.2.4



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24. The relationship between silverfish and army ants is an example of:

- a) parasitism
- b) mutualism
- c) commensalism
- d) competitive exclusion
- e) predation

Ans: c

Difficulty: Medium

Response:

Biological Communities; Symbiosis; 4.2.4

25. The relationship between a tick and a dog is an example of:

- a) parasitism
- b) mutualism
- c) commensalism
- d) an epiphytic organism and its host
- e) predation

Ans: a

Difficulty: Medium

Response:

Biological Communities; Symbiosis; 4.2.4

26. Which of the following is an adaptation of flowers resulting from the coevolution of plants and pollinators?

- a) mycorrhizae
- b) nectar
- c) epiphytes
- d) nitrogen fixing bacteria
- e) zooxanthellae

Ans: b

Difficulty: Medium

Response:

Biological Communities; Symbiosis; 4.2.4

27. An anglerfish possesses a luminescent lure close to its mouth to attract prey. This is an example of what type of predator behavior?

- a) symbiosis
- b) competition
- c) pursuit
- d) ambush
- e) warning coloration

Ans: d

Difficulty: Medium

Response:

Biological Communities; Predation; 4.2.5



Practice Midterm Exam

28. Which of the following statements is true?

- a) Predation only favors the predator, leading to evolution of more efficient ways to catch prey.
- b) Predation only favors the prey, leading to evolution of more efficient ways to escape predators.
- c) Predation exerts a selective force on the prey, favoring characteristics that reduce the probability of capture.
- d) Predation exerts a selective force on the predator, favoring characteristics that reduce the probability of prey capture.
- e) Predation has no evolutionary consequences for either the predator or the prey.

Ans: c

Difficulty: Medium

Response:

Biological Communities; Predation; 4.2.5

29. Which of the following is not an adaptation to improve the efficiency of prey capture?

- a) ambush
- b) warning coloration
- c) camouflage
- d) pursuit speed
- e) intelligence

Ans: b

Difficulty: Medium

Response:

Biological Communities; Predation; 4.2.5

30. All of the following traits are characteristic of predators except:

- a) having a large brain size in relationship to body mass
- b) speed
- c) camouflage
- d) assembling in packs or other types of animal groups
- e) having spines or other mechanical defensive devices

Ans: e

Difficulty: Medium

Response:

Biological Communities; Predation; 4.2.5

31. Which of the following traits is not a defense used by plants against herbivores?

- a) assembling in groups
- b) toxins
- c) spines or thorns
- d) thick wax layer
- e) noxious chemicals

Ans: a

Difficulty: Medium

Response:

Biological Communities; Predation; 4.2.5

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32. All of the following traits are characteristic of the adaptations of prey except:
- a) having a large brain size in comparison to body mass
 - b) having the appearance of twigs or leaves
 - c) warning coloration
 - d) assembling in herds, schools, or other types of animal groups
 - e) producing toxins

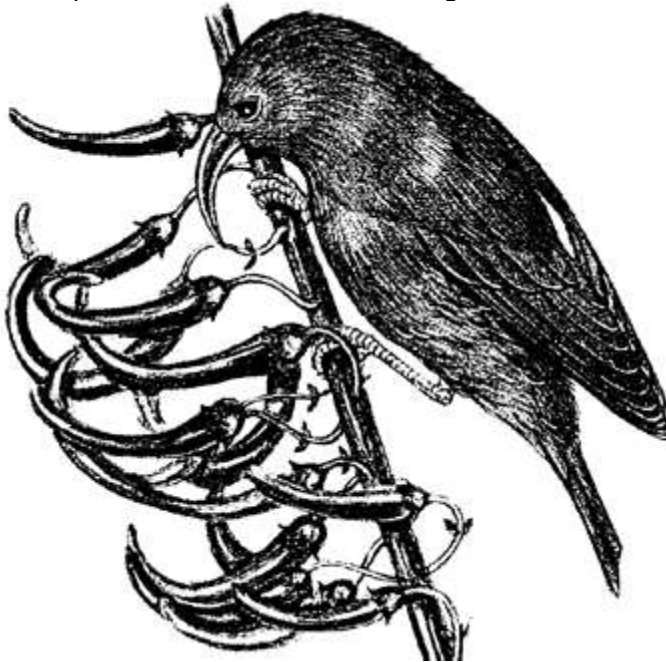
Ans: a

Difficulty: Medium

Response:

Biological Communities; Predation; 4.2.5

33. The shape of the bill on the bird in the figure below is most likely the result of:



- a) coevolution
- b) intraspecific competition
- c) parasitism
- d) natural selection
- e) both coevolution and natural selection

Ans: e

Difficulty: Medium

Response:

Biological Communities; Symbiosis; 4.2.4



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34. The realized niche for the green anole differs from its fundamental niche because of:

- a) competition
- b) symbiosis
- c) disease
- d) coevolution
- e) unlimited food supply

Ans: a

Difficulty: Medium

Response:

Biological Communities; The Ecological Niche; 4.2.2

35. Which of the following terms encompasses all of the other terms?

- a) parasitism
- b) symbiosis
- c) commensalism
- d) mutualism
- e) co-evolution

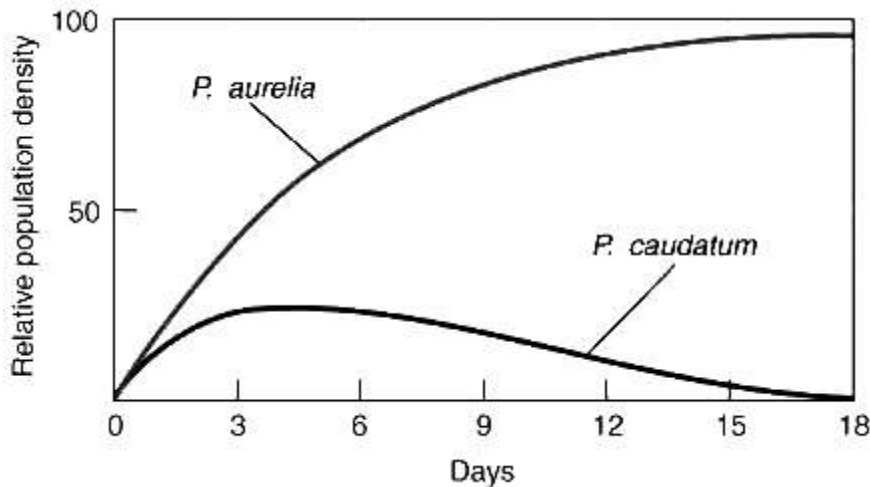
Ans: e

Difficulty: Medium

Response:

Biological Communities; Symbiosis; 4.2.4

36. The associated figure provides support for which of the following processes?



- a) secondary succession
- b) competitive exclusion
- c) coevolution
- d) mutualism
- e) resource partitioning

Ans: b

Difficulty: Medium

Response:

Biological Communities; Competition; 4.2.3



Practice Midterm Exam

37. Resource partitioning can be accomplished through all of the following except:
- a) selection of different varieties of prey
 - b) changing the time of day during which a particular species is active
 - c) changing the season during which a given species is present in a given habitat
 - d) increasing niche overlap
 - e) selection of different nesting sites

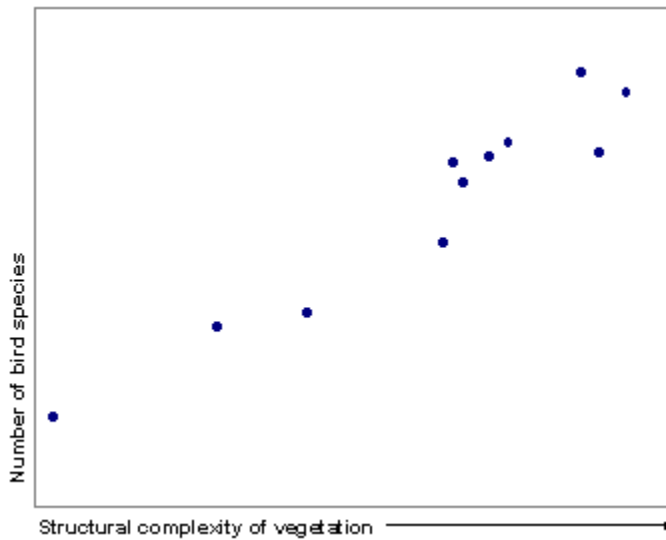
Ans: d

Difficulty: Medium

Response:

Biological Communities; Competition; 4.2.3

38. Based on the figure below, as the structural complexity of the vegetation decreases, species richness:



- a) increases
- b) decreases
- c) remains relatively stable
- d) exponentially oscillates
- e) displays geometric growth

Ans: b

Difficulty: Medium

Response:

Species Richness in a Community; Opener; 4.3



Practice Midterm Exam

39. The number of species in a community can depend on:

- a) the geological history of the region
- b) the productivity of the ecosystem
- c) the abundance of ecological niches
- d) the stability of the ecosystem
- e) all of these

Ans: e

Difficulty: Medium

Response:

Species Richness in a Community; Opener; 4.0

40. Which of these factors reduces species richness?

- a) the edge effect
- b) competitive exclusion
- c) presence of a keystone species
- d) presence of predators
- e) low environmental stress

Ans: b

Difficulty: Difficult

Response:

Biological Communities; Competition; 4.2.3

41. The reason(s) that tropical regions of the world have such high biodiversity is:

- a) because they are geologically stable
- b) because they have a high productivity
- c) because there are many ecological niches
- d) all of these
- e) none of these

Ans: d

Difficulty: Medium

Response:

Species Richness in a Community; Opener; 4.3

42. Which of the following does not correctly pair the ecosystem with a service it provides?

- a) forests – absorb carbon dioxide
- b) coasts – provide a buffer against storms
- c) grasslands – dilute and remove pollutants
- d) freshwater systems – moderate water flow
- e) sustainable agriculture systems – produce and maintain soil

Ans: c

Difficulty: Medium

Response:

Species Richness in a Community; Species Richness, Ecosystem Services, and Community Stability; 4.3.1



Practice Midterm Exam

43. Which of the following is not a source of human impact on Lake Victoria?

- a) introduction of an invasive aquatic plant
- b) introduction of an invasive aquatic predator
- c) nutrient enrichment
- d) thermal stratification
- e) deforestation

Ans: d

Difficulty: Medium

Response:

Species Richness in a Community; Case in Point: Species Richness in Lake Victoria; 4.3.2

44. If each breeding pair of elephants produces 6 offspring during a 90-year life span, in 750 years, a single pair of elephants will have given rise to a population of 19 million elephants. Yet elephants have not overrun the planet. WHY?

- a) Elephants have a niche that expands with the population.
- b) Elephants produce more offspring than will survive to maturity.
- c) Most elephants are kept in captivity (circus & zoo) and not allowed to reproduce.
- d) Individual elephants in a population exhibit no variation, reducing their reproductive success.
- e) Elephants have become geographically separated into separate species that cannot interbreed.

Ans: b

Difficulty: Medium

Response:

Evolution: How Populations Change Over Time; Natural Selection; 4.1.1

45. Which of the following is an example of coevolution?

- a) plants and carnivores
- b) fig trees and insect-eating birds
- c) sea urchins and orcas
- d) flowering plants and their pollinators
- e) none of these

Ans: d

Difficulty: Medium

Response:

Biological Communities; Symbiosis; 4.2.4

46. Because of their large size and aggressive nature, European Starlings have displaced Bluebirds from their nests in many areas of North America. This is an example of:

- a) commensalism
- b) parasitism
- c) mutualism
- d) predation
- e) competition

Ans: b

Difficulty: Medium

Response:

Biological Communities; Competition; 4.2.3



Practice Midterm Exam

47. The relationship exemplified by bees consuming nectar and carrying pollen from one flower to another is known as:
- a) commensalism
 - b) parasitism
 - c) mutualism
 - d) predation
 - e) competition

Ans: c

Difficulty: Medium

Response:

Biological Communities; Symbiosis; 4.2.4

48. Which of the following best illustrates the process of evolution?
- a) a lizard's color becomes brown as it sits on a log
 - b) a bear goes into hibernation
 - c) a plant loses its leaves in a drought
 - d) a population of mosquitoes develops resistance to a pesticide
 - e) a population of foxes increases as more prey becomes available

Ans: d

Difficulty: Medium

Response:

Evolution: How Populations Change Over Time; Natural Selection; 4.1.1

49. Which of the following is the best example of primary succession?
- a) a forest develops on abandoned farmland
 - b) a forest develops on the edge of a retreating glacier
 - c) a forest develops in the area of a forest fire
 - d) a forest develops in the area of a devastating flood
 - e) a forest develops on the site of a logging operation

Ans: b

Difficulty: Medium

Response:

Community Development; Primary Succession; 4.4.1

50. As wolves were reintroduced into the Yellowstone ecosystem, which of the following events would you assume occurred?
- a) the number of predators in the ecosystem was increased
 - b) the number of prey in the ecosystem was reduced
 - c) the plant composition became more varied and lush
 - d) the number of herbivores increased
 - e) all of these

Ans: e

Difficulty: Medium

Response:

Chapter Opener; 4.0



Practice Midterm Exam

51. In order for a parasite to be successful, it must:
- a) live outside its host's body
 - b) live inside its host's body
 - c) do no harm to the host organism
 - d) kill the host organism
 - e) keep its host alive

Ans: e

Difficulty: Medium

Response:

Biological Communities; Symbiosis; 4.2.4

52. A researcher studying the ecology of leaf litter in a Hawaiian tropical rainforest, discovers a previously unknown organism. The organism is described as having a eukaryotic multicellular structure, high degree of internal organization, chloroplasts (in photosynthetic cells), and mitochondria. The researcher is torn between two kingdoms for placement of this organism. Which two?
- a) Fungi or Plantae
 - b) Protista or Plantae
 - c) Archaeobacteria or Protista
 - d) Animalia or Protista
 - e) Eubacteria or Fungi

Ans: b

Difficulty: Medium

Response:

Evolution: How Populations Change Over Time; Evolution of Biological Diversity: The Domains and Kingdoms of Life; 4.1.3

53. The ability of a community to withstand environmental disturbances (community stability) is a consequence of:
- a) geographic size of community
 - b) power of keystone species
 - c) species richness
 - d) species poverty
 - e) sheer luck

Ans: c

Difficulty: Medium

Response:

Species Richness in a Community; Species Richness, Ecosystem Services, and Community Stability; 4.3.1



Practice Midterm Exam

54. The potential ecological niche of an organism is its _____, while the niche an organism actually occupies is its _____.
- a) realized niche; fundamental niche
 - b) fundamental niche; realized niche
 - c) kinetic niche; latent niche
 - d) genuine niche; probable niche
 - e) competitive niche; passive niche

Ans: b

Difficulty: Medium

Response:

Biological Communities; The Ecological Niche; 4.2.2

55. Which of the following is an area where primary succession would occur?
- a) recently formed volcanic lava
 - b) a clear-cut area
 - c) an abandoned field
 - d) an area cleared by a tornado
 - e) none of these

Ans: a

Difficulty: Easy

Response:

Community Development; Primary Succession; 4.4.1

56. Which of the following is a keystone species in U.S. temperate forests?
- a) deer
 - b) white pine
 - c) gray wolves
 - d) lichen
 - e) rabbit

Ans: c

Difficulty: Medium

Response:

Biological Communities; Keystone Species; 4.2.6

57. What is the transitional zone where two or more communities meet?
- a) edge effect
 - b) ecotone
 - c) resource partition
 - d) keystone habitat
 - e) competitive exclusion

Ans: b

Difficulty: Easy

Response:

Species Richness in a Community; Opener; 4.3



Practice Midterm Exam

58. Which term defines competition between species?

- a) commensalism
- b) intraspecific competition
- c) predation
- d) competitive exclusion
- e) interspecific competition

Ans: e

Difficulty: Easy

Response:

Biological Communities; Competition; 4.2.3

59. Small plants attaching to the bark of larger trees benefit from the position on the tree, receiving necessary water and sunlight while giving the tree neither help nor harm. This is an example of...

- a) environmental stressors
- b) mycorrhizae
- c) habitat fragmentation
- d) commensalism
- e) none of these

Ans: d

Difficulty: Medium

Response:

Biological Communities; Symbiosis; 4.2.4

60. What are the three kinds of symbiosis?

- a) warning colors, mutualism, and cannibalism
- b) mutualism, parasitism, and commensalism
- c) competition, predation, and coevolution
- d) epiphytes, prokaryotes, and eukaryotes
- e) none of these

Ans: b

Difficulty: Easy

Response:

Biological Communities; Symbiosis; 4.2.4

61. Green anoles were forced out of their established habitat of trees, plants, walls and fences by invasive brown anoles. The green anoles then had to find new habitats in wetlands and tree crowns. This example illustrates the concepts of:

- a) competition
- b) fundamental niche
- c) realized niche
- d) parasitism
- e) both competition and realized niche

Ans: e

Difficulty: Medium

Response:

Biological Communities; The Ecological Niche; 4.2.2



Practice Midterm Exam

62. Which of the following has an intricate relationship with the occurrence of Lyme disease?

- a) acorns
- b) gypsy moths
- c) white-footed mice
- d) all of these
- e) none of these

Ans: d

Difficulty: Easy

Response:

Biological Communities; Community Interactions in an Oak Forest; 4.2.1

63. Why was the Yellowstone wolf declared an 'experimental nonessential' species in the area?

- 1) the ESA forbids killing an endangered species
 - 2) there wasn't enough demand to keep the wolves on the endangered species list
 - 3) farmers and ranchers wanted to right to kill wolves to defend their livestock
 - 4) defenders of wildlife didn't believe the wolves were endangered any longer
- a) 1
 - b) 2
 - c) 3
 - d) 4
 - e) Both 1 and 3

Ans: e

Difficulty: Medium

Response:

Chapter Opener; 4.0

64. How did the discovery of genetic mutation contribute to the modern synthesis of evolution?

- a) it explained patterns of inheritance
- b) it demonstrated the true structure of DNA
- c) it provided a mechanism by which genetic variation could be generated
- d) it showed why reproductive success can vary among individuals
- e) it illustrated that many more young are produced than can survive

Ans: c

Difficulty: Medium

Response:

Evolution: How Populations Change Over Time; The Modern Synthesis; 4.1.2