

AP Biology Summer Assignments

General Directions: Ecology and Behavior are important units in the AP Biology Curriculum. It is your responsibility to study these sections during the summer and complete the assignments individually (NO GROUP WORK OR SHARED WORK). Your work will be graded for correctness. If there is evidence that there was collaboration, you will receive a zero for the assignment.

Directions: Go to the Berks Catholic Website, go into your Canvas account, and click on the AP Biology folder (your class). The first module is your summer work, please click on that to access everything you need for your summer assignments. This includes worksheets, where to submit your work, due dates, etc. All of your summer work will be submitted on Canvas. When you are handwriting the laboratory, you must take a CLEAR picture of your work and then submit it. If I can not see it due to the picture being taken too far away, lack of proper lighting, or it is blurry, you will receive a zero. So please make sure you check your picture before submitting it. If you can't read it clearly, nor can I.

- Assignments for Chapter 52, 53, 54, 55, and 56. Please **hand write** the assignments directly on the paper from the packet.
- Each activity is to be on a separate paper, stapled to stay organized, and put in a binder labeled AP Biology for your AP course work from summer all the way through the 2020-21 school year.
- Chapter 52, 53, 54, 55 and 56 review questions (objective questions) You should fill out the answer sheet with the correct choices on a separate piece of paper. Numbered with the letter choice next to it.
- This is due the first day that we meet formally as a class in the fall as well.
- You will be given a book used for summer assignments. You will receive another text book in August/September.
- **Always check Canvas for summer assignments and assignments for the first week of school. Extra assignments may be listed on Canvas as well.** It is important to check on a weekly basis.
- Please contact me if you have any questions.
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Have a great summer see you in the fall!

NAME: _____ WHAT
FACTORS DETERMINE CLIMATE?

The map below shows a hypothetical continent on Earth. Assume that biomes and climates on this continent are produced by the same factors that produce biomes and climates on Earth's real continents. Use this map to answer the questions in this activity. Where needed draw, draw the required features directly on the map.

1. On the map of the hypothetical continent, indicate the location(s) of the biomes listed on the table below. To do this, draw approximate boundary lines to delimit each biome type, and then label each delimited area with the type of biomes it contains.
2. In the table indicate the annual temperature and precipitation ranges for each biome.

BIOME TYPE	Annual temperature and precipitation ranges
a. Tropical rain forest(s)	
b. Temperate grasslands	
c. Chaparral	
d. Temperate forest(s)	
e. Tundra	

3. Are the surface winds at the given points warming or cooling as they move? Explain.

POINT ON THE MAP	Are the winds warming or cooling as they move?	EXPLANATION
X ₁		
X ₂		
X ₃		

4. What biomes or vegetation types would most likely be found at the given points? (assume all are at sea level)

POINT ON THE MAP	MOST LIKELY TYPE OF BIOME OR VEGETATION
A	
B	
C	
D	

5. Would the climate at point E be relatively wet or dry? Explain.

6. In the United States, temperate forest extends from the East Coast westward

for about 1,200 miles (to the Mississippi River Valley). From there, the forest begins to thin out toward the west into oak savannas (or temperate woodland), and it finally gives way to open grassland (Great Plains). The grasslands extend 1,000

miles westward to the foothills of the Rocky Mountains.

- a. Why does grassland replace forest west of the Mississippi River?
- b. What biome would exist at point F?

7. How are the general characteristics of plants (for example, morphology) influenced by climate? In other words, explain what effects climate has on the types of plants that grow in an area.

NAME: _____

WHAT METHODS CAN BE USED TO DETERMINE POPULATION DENSITY AND DISTRIBUTION?

1. To measure the population density of the chipmunks in a particular park, you sample several plots and capture 50 chipmunks. You mark each of their backs with a dot of red paint and then release them. The next day, you capture another 50 chipmunks. Among the 50, you find 10 that are marked.

a. Using the mark-recapture formula below, how many chipmunks do you estimate the population contains?

Number of recaptures in second catch = Number marked in first catch

Total number in second catch Total population N

GRASSHOPPER POPULATION DENSITY (INDIVIDUALS/ACRE)	DEATHS PER YEAR PER ACRE		MORTALITY RATE (%)
	Agent A	Agent B	
100	40	0	

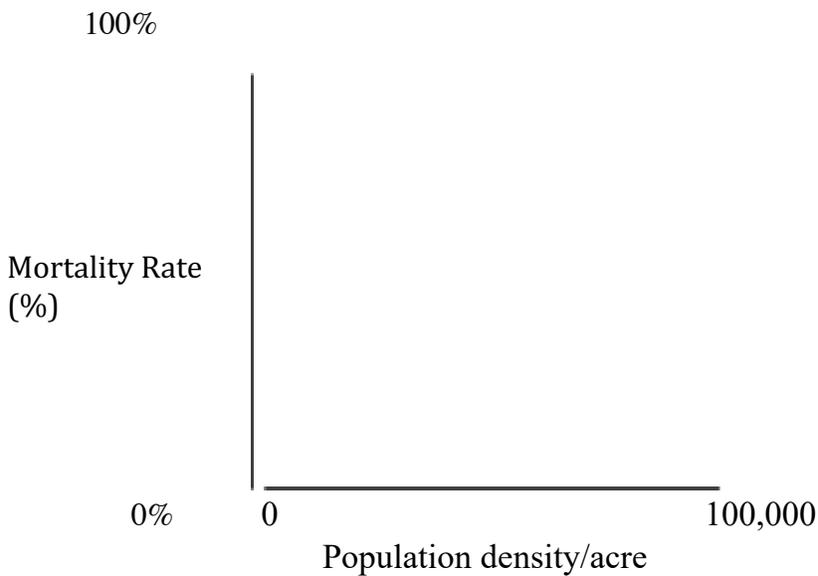
1000	40	25	
10,000	400	500	
100,000	4000	50,000	

b. You later discover that the chipmunks were licking the marks off each others' backs. What effect would this discovery have on your estimate?

2. The following table shows the numbers of grasshopper deaths per acre per year resulting from two different agents of mortality applied to grasshopper populations of different densities.

a. Fill in the mortality rates for agents A and B in the table above.

c. Graph the data.



Which of the two agents of mortality is operating in a density- independent manner?

Which of the two agents of mortality is likely to act as a factor stabilizing the size of the grasshopper population?

NAME: _____ WHAT
FACTORS ARE CONSIDERED WHEN
ANALYZING COMMUNITIES OF
ORGANISMS?

Define the following ecological principles:

Coevolution
Realized Niche
Fundamental Niche
Tolerance
Competitive Exclusion
Resource Partitioning
Character Displacement

Top-down vs. bottom-up controls
Trophic Structure or Trophic level
Keystone species
Competition
Disturbance

Understanding problems in community ecology most often requires the integration of a number of ecological principles.

For question 1 and 2, analyze the situations described. Then explain which of the following ecological principles could be active in each particular situation.

1. A small clan of hyenas killed an antelope. While they were feeding on the carcass, two female lions approached, growled at the hyenas, and chased them away from the carcass.

2. In 1962, five mute swans escaped from captivity and began a breeding population in Chesapeake Bay. Today, there are over 4,000 mute swans living in the bay. Each year they eat approximately 10.5 million pounds of aquatic grasses. These grasses provide habitat for waterfowl and crustaceans, improve water quality, decrease erosion, and increase dissolved oxygen concentrations in the bay. The swans are also aggressively territorial, and have been known to trample nests of other birds (e.g. least terns and black skimmer) and drive native birds such as tundra swans and black ducks from feeding and roosting areas.

NAME: _____

WHAT EFFECTS CAN A DISTURBANCE HAVE ON A COMMUNITY OF ORGANISMS?

Disturbances affect only one species in a community. More often, disturbances that have direct effects on a single species produce a cascade of additional effects on other species.

For questions 1 & 2, analyze the ecological situations described. Then answer the questions that follow each situation.

1. A particularly popular island vacation site is home to many species of orchids. The primary income-generating businesses on the island are tourism and orchid sales.

DISTURBANCE: To make the island more attractive to visitors, a local politician suggested that the island be periodically "fogged" with insecticides.

RESPONSE: This fogging reduced the insect numbers. It also appeared to reduce the number of birds and new growths of orchids.

(HINT: Examine the ideas of limits of tolerance, coevolution, predation, and bioaccumulation).

a. Is it likely that the disturbance caused the response?

- b. What other factors might be involved?
- c. How could you test different factors for their effect on the response? For example, what experiments could you set up?
- d. What would you expect to find if other factors you proposed affected the response?

2. Australia and New Zealand are home to a wide variety of marsupials (for example, kangaroos and other pouched mammals). Until colonization by foreign traders and other developments, placental mammals were not found in these areas.

DISTURBANCE: Following colonization, the rabbit was introduced to Australia.

RESPONSE: The rabbit multiplied rapidly and ultimately became a pest species, doing considerable damage to both crop and natural plants.

(**HINT:** Examine the ideas of competition, competitive exclusion, predation, and coevolution).

- a. Is it likely that the disturbance directly caused the response?
- b. What other factors might be involved?
- c. How could you test different factors for their effect on the response? For example, what experiments could you set up?

- d. What would you expect to find if other factors you proposed affected the response?

NAME: _____

HOW CAN DISTANCE FROM THE MAINLAND AND ISLAND SIZE AFFECT SPECIES RICHNESS?

1. Island biogeography theory attempts to explain the patterns of species richness and turnover on islands as a function of the size of the island and its distance from the mainland.

a. What are the basic tenets of this theory?

2. A research scientist comes back from studying a group of islands in the South Pacific. He says his data show that, in some cases, the smaller islands had

larger numbers of lizard species on them than did the larger islands. He suggests these data indicate that we should reexamine the whole theory of island biogeography.

a. What additional information would you like to have about the group of islands he studied?

b. Is there any way his data could be accounted for using the current theory of island biogeography. Explain your reasoning.

NAME: _____

WHAT LIMITS DO AVAILBALE SOLAR RADIATION AND NUTRIENTS PLACE ON CARRYING CAPACITIES?

1. Energy transformations in a community can be diagrammatically represented as a trophic structure.
 - a. Diagram a simple trophic structure for a grassland community.
 - b. At what trophic level(s) do humans belong in your diagram? Explain.

2. Energy is lost at every step in the trophic structure where energy is transferred-for example. from primary producers to primary consumers. It is estimated that only 1% of the solar energy striking plants is converted to chemical energy, only 50-90% of gross primary productivity (GPP) becomes net primary productivity (NPP), and only about 10% of the energy available at each trophic level transfers to the next level (as biomass).

- a. How do GPP and NPP relate to the percentage of energy transfers from one trophic level to the next?
- b. Where does the "lost energy" go? Is it correct to say that energy is "lost" in these transfers? Explain.

3. The text states that each day Earth is "bombarded by about 10^{22} joules of solar radiation ($1\text{J} = 0.239\text{ cal}$)." It has also been estimated that primary producers on Earth collectively create about 170 billion tons of organic material per year. Do the following calculations to determine how these two values compare.

- a. Convert 10^{22} joules per day to kilocalories per year.
- b. Convert 170 billion tons of organic material to kilocalories. To do this, assume all of the 170 billion tons is glucose. Also assume tons are metric tons. (180 grams of glucose burned in a calorimeter gives off 686 kcal of energy).
- c. Given your answers to parts a and b, what percentage of the total incoming solar energy is captured as biomass (glucose)?
- d. Measurements of photosynthetic conversion of the

energy in sunlight to biomass indicate that, at best, plants can convert about 75% of the energy they absorb as sunlight into biomass. The other 25% is used to support metabolism. What could account for the apparently low efficiency of photosynthesis relative to the total incoming solar energy that you calculated in part c?

4. If we can calculate Earth's total primary productivity, we can use it to develop an estimate of the total number of humans Earth can support.

a. How much energy in kilocalories per year would it take to support

Earth's current human population if all individuals weighed about 75 kg and each required 2,000 kcal per day? Assume 6×10^9 humans currently inhabit Earth.

b. Is it reasonable to assume that all of the primary productivity on

Earth is available to support humans? If not, what else do you need to consider?

AP SUMMER ASSIGNMENT OBJECTIVE QUESTIONS FOR ECOLOGY UNIT

Directions: Choose the correct answer and mark your choice on the answer sheet.

1. Which of the following statements about ecology is incorrect?

a. Ecologists may study populations and communities of organisms. Were interested with man's interaction with the natural world.

b. Present-day ecologists seek to link ecology to developmental biology.

c. Ecology is a discipline that is independent from natural selection and evolutionary history.

d. Ecology spans increasingly comprehensive levels of organization, from individuals to ecosystems.

2. Which of the following levels of organization is arranged in the correct sequence from most to least inclusive?

a. community, ecosystem, individual, population

b. ecosystem, community, population, individual

c. population, ecosystem, individual, community
d. individual, population, community, ecosystem
e. individual, community, population, ecosystem

3. Which of the following statements best describes the difference in approach to studying the environment by early naturalists compared to present-day ecologists?

a. Early naturalists employed a descriptive approach; present-day ecologists generate hypotheses, design experiments, and draw conclusions from their observation.

b. Early naturalists manipulated the environment and observed changes in plant and animal populations, while modern ecology focuses on population dynamics.

c. Early naturalists systematically recorded what they observed in their environment; modern ecology is only concerned with man's impact on the environment.

d. Early naturalists were interested with man's interaction with the natural world; present-day ecologists seek to link ecology to developmental biology.

4. Which of the following are important biotic factors that can affect the structure and organization of biological communities?

a. precipitation , wind

b. nutrient availability, soil pH

c. predation, competition

d. temperature, water

e. light intensity, seasonality

5. Which of the following abiotic factors has the greatest

influence on the metabolic rates of plants and animals?

- a. water
- b. wind
- c. temperature
- d. rocks & soil
- e. disturbances

6. Coral reefs can be found on the southern east coast of the United States but not at similar latitudes on the southern west coast. Differences in which of the following most likely account for this?

- a. sunlight intensity
- b. precipitation
- c. day length
- d. ocean currents
- e. salinity

7. Which of the following is responsible for the summer and winter stratification of deep temperate lakes?

- a. Water is densest at 4°C.
- b. Oxygen is most abundant in deeper waters.
- c. Winter ice sinks in the summer.
- d. Stratification is caused by a thermocline.

8. Which of the following environmental features might influence microclimates?

- a. a discarded soft-drink can
- b. a tree
- c. a fallen log
- d. a stone
- e. all of the above

9. Species introduced to new geographic locations

- a. are usually successful in colonizing the area
- b. always spread because they encounter no natural predators
- c. increase the diversity and therefore the stability of the ecosystem
- d. can out compete and displace native species for biotic and abiotic resources
- e. are always considered pests by ecologists

10. Coral animals are:

- a. a diverse group of cnidarians often forming mutualistic symbiotic relationships with dinoflagellate algae.
- b. are predominantly photosynthetic, multicellular algae.
- c. can tolerate low oxygen and nutrient levels, and

varying levels of salinity.

d. can only survive in tropical waters 30°C and above.

11. Which of the following is **not** true about estuaries?

a. Estuaries are often bordered by mudflats and salt marshes.

b. Estuaries contain waters of varying salinity.

c. Estuaries support a variety of animal life that humans consume.

d. Estuaries usually contain no or few producers.

e. Estuaries support many semiaquatic species.

12. Probably the most important factor(s) affecting the distribution of biomes is(are)

a. wind and ocean water current patterns.

b. species diversity

c. proximity to large bodies of water

d. climate

e. day length and rainfall

13. In the development of terrestrial biomes, which factor is most dependent on all others?

a. the species of colonizing animals

- b. prevailing temperature
- c. proximity to large bodies of water
- d. climate
- e. soil structure

14. An area in which different terrestrial biomes grade into each other is known as a(n)

- a. littoral zone
- b. vertically stratified canopy
- c. ecotone
- d. abyssal zone
- e. cline

15. Two plant species live in the same biome but on different continents. Although the two species are not at all closely related, they may appear quite similar as a result of

- a. parallel evolution
- b. convergent evolution
- c. allopatric speciation
- d. introgression
- e. gene flow

16. In which of the following terrestrial biome pairs are both dependent upon periodic burning?

- a. tundra and coniferous forest
- b. chaparral and savanna
- c. desert and savanna
- d. tropical forest and temperate broadleaf forest
- e. grassland and tundra

17. Which biome is able to support many large animals despite receiving moderate amounts of rainfall?

- a. tropical rainforest
- b. temperate forest
- c. chaparral
- d. taiga
- e. savanna

18. Tropical grasslands with scattered trees are also known as :

- a. taigas
- b. tundras
- c. savannas
- d. chaparrals
- e. temperate plains

19. The growing season would generally be shortest in which

of the following biomes?

- a. savanna
- b. temperate broadleaf forest
- c. temperate grassland
- d. tropical rain forest
- e. coniferous forest

20. If global warming continues at its present rate, which biomes will likely take the place of the coniferous forest (taiga)?

- a. tundra and polar ice
- b. temperate broadleaf forest and grassland
- c. desert and chaparral
- d. tropical forest and savanna
- e. chaparral and temperate broadleaf forest

21. A population is correctly defined as having which of the following characteristics?

I. inhabiting the same general area

II. individuals belonging to the same species

III. possessing a constant and uniform density and dispersion

- a. I only
- b. III only
- c. I and II only
- d. II and III only
- e. I, II, and III

22. An ecologist recorded 12 white-tailed deer, *Odocoileus virginianus*, per square mile in one woodlot and 20 per square on another woodlot. What was the ecologist comparing?

- a. density
- b. dispersion
- c. carrying capacity
- d. quadrats
- e. range

23. The most common kind of dispersion in nature is

- a. clumped
- b. random
- c. uniform
- d. indeterminate
- e. dispersive

24. A table listing such items as age, observed number of organisms alive each year, and life expectancy is known as a (an)

- a. life table
- b. mortality table
- c. survivorship table
- d. rate table
- e. insurance table

25. Long-term studies of Belding's ground squirrels show that immigrants move nearly 2 km from where they are born and make up 1 to 8% of the males and 0.7 to 6% of the females in other populations. On an evolutionary scale, why is this significant?

a. These immigrants make up for the deaths of individuals keeping the other populations' size stable.

b. Young reproductive males tend to stay in their home population and are not driven out by other territorial males.

c. These immigrants provide a source of genetic diversity for the other populations.

d. Those individuals that emigrate to these new populations are looking for less crowded conditions with more resources.

e. Gradually, the populations of ground squirrels will move from a uniform to a clumped population pattern of dispersion.

26. Demography is the study of:

a. the vital statistics of populations and how they change over time

b. death and emigration rates of a population at any moment in time

c. the survival patterns of a population

d. life expectancy of individuals within a population

e. reproductive rates of a population during a given year

27. Logistic growth of a population is represented by $dN/dt =$

a. rN

b. rN

c. $rN(K+N) / K$

d. $rN(K-N) / K$

28. In models of sigmoidal (logistic) population growth,
- a. population growth rate slows dramatically as N approaches K
 - b. new individuals are added to the population most rapidly at the beginning of the population's growth
 - c. only density-dependent factors affect the rate of population growth
 - d. only density-independent factors affect the rate of population growth
 - e. carrying capacity is never reached

29. Which of the following is the pattern of spacing for individuals within the boundaries of the population?

- a. cohort
- b. dispersion
- c. Allee effect
- d. iteroparous
- e. semelparous

30. Carrying capacity is

- a. seldom reached by marine producers and consumers because of the vast resources of the ocean
- b. the maximum population size that a particular environment can support
- c. fixed for most species over most of their range most of the time

- d. determined by density and dispersion data
- e. the term used to describe the stress of a population undergoes due to limited resources

31. Which of the following can contribute to density-dependent regulation of populations?

- a. the removal of toxic waste by decomposers
 - b. intraspecific competition for nutrients
 - c. earthquakes
 - d. floods
 - e. weather catastrophes
32. According to the competitive exclusion principle, two species cannot continue to occupy the same:
- a. habitat b. niche c. territory d. range e. biome

33. Which of the following is a good description of an ecological niche?

- a. the "address" of an organism
- b. synonymous with an organism's specific trophic level
- c. how an organism uses the biotic and abiotic resources in the community
- d. the organism's role in recycling nutrients in its habitat

e. the interactions of the organism with other members of the community

34. Which of the following best describes resource partitioning?

a. Competitive exclusion results in the success of the superior species.

b. Slight variations in niche allow similar species to coexist

c. Two species can coevolve to share the same niche

d. Differential resource utilization results in the decrease in species diversity.

e. A climax community is reached when no new niches are available.

35. Evidence shows that some grasses benefit from being grazed. Which of the following terms would best describe this plant-herbivore interaction?

a. mutualism b. commensalism c. parasitism d. competition

e. predation

36. Which of the following terms best describes the interaction between termites and the protozoans that feed in their gut?

a. commensalism

- b. mutualism
- c. competitive exclusion
- d. ectoparasitism
- e. endoparasitism

37. Which of the following best describes an ecological community?

- a. The intraspecific competition of members of a brook trout population inhabiting a stream during a given year.
- b. The interactions of all the plant and animal species inhabiting a 2 hectare forest.
- c. The material cycling and energy transformations between the biotic and abiotic components of an open meadow.
- d. The various species of barnacles competing for resources in an intertidal zone.
- e. The interactions of the various plant and animal species of park, excepting the decomposers.

38. Community ecologists would consider which of the following to be most significant in understanding the structure of an ecological community?

- a. determining how many species are present overall
- b. which particular species are present
- c. the kinds of interactions that occur among organisms of different species
- d. the relative abundance of species all of the above
- e. all the above

39. Monarch butterflies are protected from birds and other predators but the cardiac glycosides they incorporate into their tissues are from eating milkweed when they were in their caterpillar stage of development. The wings of a different species of butterfly, the Viceroy, look nearly identical to the Monarch so predators that have learned not to eat the bad-tasting Monarch avoid Viceroy as well. This is an example of:

- a. aposmatic coloration
- b. cryptic coloration
- c. Batesian mimicry
- d. Mullerian mimicry
- e. mutualism

40. The species richness of a community refers to the

- a. complexity of the food web

- b. number of different species
- c. the bottom-heavy shape of the energy pyramid
- d. producing tissues that have unappealing colors
- e. synthesizing chemicals that can cause abnormal development in some insects that eat them

41. The dominant species in a community is:

- a. characterized by very large individuals with long lives
- b. the best competitor in the community
- c. the best predator in the community
- d. the species that contributes the most biomass to the community
- e. the most energetically efficient species in the community

42. In a tide pool, 15 species of invertebrates were reduced to eight after one species was removed. The species removed was likely a(n)

- a. community facilitator
- b. keystone species
- c. herbivore
- d. resource partitioner

e. mutualistic organism

43. Which of the following is considered by ecologists a measure of the ability of a community either to resist change or to recover to its original state change?

a. stability

b. succession

c. partitioning

d. productivity

e. competitive exclusion

44. According to the nonequilibrium model, after

a. communities will remain in a mature state if there are no human disturbance

b. community structure remains constant in the absence of interspecific competition

c. communities are assemblages of closely linked species that are irreparably changed by disturbance

d. interspecific interactions induce changes in community composition over time

e. communities are constantly changing after being influenced by disturbances

45. Which of the following describes the relationship between legumes and nitrogen-fixing bacteria?

- a. parasitism
- b. mutualism
- c. inhibition
- d. facilitation
- e. commensalism

46. Which of the following describes a successional event in which one organism makes the environment more suitable for another organism?

- a. parasitism
- b. mutualism
- c. inhibition
- d. facilitation

47. Species richness increases:

- a. as we increase in altitude in equatorial mountains
- b. as we travel north from the South Pole
- c. on islands as distance from mainland increases
- d. as depth increases in aquatic communities
- e. as community size decreases

48. How are matter and energy used in ecosystems?

- a. Matter is cycled through ecosystems; energy is not.
- b. Energy is cycled through ecosystems; matter is not.
- c. Energy can be converted into matter; matter cannot be converted into

energy.

d. Matter can be converted into energy ; energy cannot be converted into energy matter.

49. A cow's herbivorous diet indicates that it is a(n)

a. primary consumer b. secondary consumer c. decomposer

d. autotroph e. producer

50. To recycle nutrients, the minimum an ecosystem must have is

a. producers

b. producers & decomposer

c. producers, primary consumers, and decomposers

d. producers, primary consumers, secondary consumers, and decomposers

e. producers, primary consumers, secondary consumers, top carnivores, and decomposers

51. Of the following pairs, which are the main decomposers in a terrestrial ecosystem?

a. fungi & prokaryotes b. plants & mosses c. insects & mollusks d. mammals & birds e. annelids & nematodes

52. What is the most important role of photosynthetic

organisms in an ecosystem?

- a. converting inorganic compounds into organic compounds
- b. absorbing solar radiation
- c. producing organic detritus for decomposers
- d. dissipating heat
- e. recycling energy from other trophic levels

53. If the Sun were to suddenly stop providing energy to Earth, most ecosystems would vanish. Which of the following ecosystems would likely survive the longest after the hypothetical disaster?

- a. tropical rainforest b. tundra c. benthic ocean d. grassland
- e. desert.

54. The producers in aquatic ecosystems include organisms in which of the following groups?

- a. cyanobacteria b. algae c. plants d. photoautotrophs
- e. A,B,C, and D are all correct

55. Aquatic ecosystems are least likely to be limited by which of the following nutrients?

- a. nitrogen b. carbon c. phosphorus d. iron e. zinc

56. Which of the following lists of organisms is ranked in correct order from lowest to highest?

- a. mammals, fish, insects
- b. insects, fish, mammals
- c. fish, insects, mammals
- d. insects, mammals, fish
- e. mammals, insects, fish

57. Trophic efficiency is

- a. the ratio of net secondary production to assimilation of primary production
- b. the percentage of production transferred from one trophic level to the next.
- c. a measure of how nutrients are cycled from one trophic level to the next.
- d. usually greater than production efficiencies.
- e. about 90% in most ecosystems

58. In general, the total biomass of ecosystems will be greatest for which trophic level?

- a. producers
- b. herbivores
- c. primary consumers
- d. tertiary consumers
- e. secondary consumers

59. The high levels of pesticides found in birds of prey is an example of:

- a. eutrophication
- b. predation
- c. biological magnification
- d. the green world hypothesis
- e. chemical cycling through an ecosystem

60. What is the estimated number of extant species on Earth?

- a. 1,000 to 50,000
- b. 50,000 to 150,000
- c. 500,000 to 1,000,000
- d. 10,000,000 to 200,000,000
- e. 5 billion - 10 billion

61. Although extinction is a natural process, current extinctions are of concern to

- a. more animals than ever before are going extinct
- b. most current extinctions are caused by introduced species

- c. the rate of extinction is unusually high
- d. current extinction is primarily affecting plant diversity
- e. none of the above

62. The most serious consequence of a loss in ecosystem biodiversity would be the

- a. increase in global warming and thinning of the ozone layer.
- b. loss of ecosystem services on which people depend.
- c. increase in the abundance and diversity of edge-adapted species.
- d. loss of source of genetic diversity to preserve endangered species.
- e. loss of species for "bioprospecting."

63. According to most conservation biologists, the single greatest threat to global biodiversity is

- a. chemical pollution of water and air
- b. stratospheric ozone depletion
- c. insufficient recycling programs for nonrenewable resources
- d. alteration or destruction of the physical habitat

e. global climate change resulting from a variety of human activities

64. Which of the following is the most direct threat to biodiversity?

a. increased levels of atmospheric carbon dioxide

b. the depletion of the ozone layer

c. overexploitation of species

d. habitat destruction

e. zoned reserves

65. Introduced species can have deleterious effects on biological communities by

a. preying on native species

b. competing with native species for food or light

c. displacing native species

d. competing with native species for space or breeding/nesting habitat

e. a,b,c,and d

66. Which of the following is a method of predicting the likelihood that a species will persist in a particular environment?

a. source-sink analysis b. population viability analysis c.

minimum viable population size d. extinctive vortex e.
effective population size

67. Modern conservation science increasingly aims at;

- a. protecting federally listed endangered species
- b. lobbying for strict enforcement of the U.S. Endangered Species Act
- c. sustaining biodiversity of entire ecosystems and communities
- d. maintaining all genetic diversity within all species
- e. saving as much habitat as possible from development and exploitation.

68. Which of the following would a landscape ecologist consider in designing a nature reserve?

- a. patterns of landscape use by humans
- b. human economic concerns
- c. possible edge effects related to human activities
- d. nature viewing sites
- e. a, b, c, and d are all correct

69. Which of the following nations has become a world leader in the establishment of zoned reserves?

- a. Costa Rica b. Canada c. China

d. United States e. Mexico

70. Humans use of prokaryotic organism to help detoxify a polluted wetland would be an example of

a. ecosystem augmentation b. keystone species introduction c. biological control d. bioremediation e. population viability analysis