Test Bank for *Environment: Science, Issues, Solutions*
Chapter 2

1. The network of people, institutions, and commercial interests involved in the production, distribution, and consumption of goods and services is called:
   A. an economic system.
   B. an ecosystem.
   C. a functional system.
   D. sustainable development.

ANS: A
Chapter: 2
Question Type: Multiple choice
Book Section: 2.1
Bloom's level: Remembering
Level of difficulty: Easy

2. The goal of sustainable development is to:
   A. meet human needs first.
   B. meet the needs of future generations.
   C. meet the needs of the present generation without compromising the needs of future generations.
   D. protect the environment.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.1
Bloom's level: Understanding
Level of difficulty: Easy

3. Which of the following best describes a pond ecosystem?
   A. All the plants and animals that inhabit it
   B. The physical dimensions of the pond
   C. The physical and chemical environment
   D. All the plants and animals that inhabit it and their interactions with the physical and chemical environment

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.1
Bloom's level: Applying
Level of difficulty: Easy

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4. A molecule is:

A. the smallest particle of a substance that retains the properties of the substance.
B. anything that occupies space and has mass.
C. a substance composed of a single type of atom.
D. a particle composed of two or more atoms held together by chemical bonds.

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.1
Bloom's level: Understanding
Level of difficulty: Easy

5. All water molecules are composed of one oxygen and two hydrogen atoms. Which of the following best explains this observation?

A. Atoms are the basic building block of matter.
B. All elements are composed of atoms.
C. All compounds are composed of a fixed ratio of two or more elements.
D. Water is the most abundant compound in living things.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.1
Bloom's level: Applying
Level of difficulty: Easy

6. In the chemical reaction between methane (CH_4) and oxygen (O_2):

A. matter is destroyed.
B. matter is transformed.
C. energy is released.
D. matter is transformed and energy is released.

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.1
Bloom's level: Understanding
Level of difficulty: Moderate

7. Which of the following best describes work?

A. the force needed to move an object
B. the distance an object is moved
C. the product of the force needed to move an object and the distance moved
D. stored energy

ANS: C

Chapter: 2
Question Type: Multiple choice
Book Section: 2.2
Bloom's level: Understanding
Level of difficulty: Moderate

8. Once a book is placed on a shelf, it is said to have:
    A. chemical energy.
    B. kinetic energy.
    C. gravitational potential energy.
    D. thermal energy.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.2
Bloom's level: Understanding
Level of difficulty: Moderate

9. The energy represented by the motion of molecules is _____ energy.
    A. potential
    B. thermal
    C. gravitational
    D. chemical

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.2
Bloom's level: Remembering
Level of difficulty: Easy

10. Which of the following describes the first law of thermodynamics?
    A. Despite energy transformations, the total energy of a closed system will remain the same.
    B. As energy is transformed, some energy is lost as heat to the surroundings.
    C. The entropy of a closed system will increase over time.
    D. It is the capacity to do work.

ANS: A
Chapter: 2
Question Type: Multiple choice
Book Section: 2.2
Bloom's level: Understanding
Level of difficulty: Easy

11. To maintain the order in a closed system:

A. an input of energy is required.
B. the total energy of the system cannot change.
C. entropy must increase.
D. no energy can be transformed.

ANS: A
Chapter: 2
Question Type: Multiple choice
Book Section: 2.2
Bloom's level: Applying
Level of difficulty: Moderate

12. Because of energy transformations, the amount of energy available to do work over time in a closed system:

A. always remains the same.
B. decreases.
C. increases.
D. may increase or decrease.

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.2
Bloom's level: Applying
Level of difficulty: Easy

13. How would the electrical energy output of a wind generator compare to the wind energy needed to move the generator blades?

A. It would be the same.
B. It would be greater.
C. It would be less.
D. Depending on how windy it is, it could be either greater or less than the wind energy.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Applying
Level of difficulty: Moderate

14. The set of feeding relationships between organisms indicating the flow of energy and materials in an ecosystem is a:

A. energy pyramid.
B. biogeochemical cycle.
C. food web.
D. carbon cycle.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Understanding
Level of difficulty: Easy

15. The energy remaining from the energy produced by plants in photosynthesis after subtracting the energy used in respiration is:

A. gross primary production.
B. net primary production.
C. entropy.
D. energy pyramid.

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Remembering
Level of difficulty: Easy

16. The energy produced by primary producers, which becomes available to the rest of the food web, is:

A. gross primary production.
B. net primary production.
C. entropy.
D. carbon cycle.

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Remembering
Level of difficulty: Easy

17. In photosynthesis, molecules of carbon dioxide and water are transformed into:

A. energy.
B. entropy.
C. glucose and oxygen.
D. heat.

ANS: C

Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Understanding
Level of difficulty: Easy

18. Assuming the typical efficiency of energy transfer in an energy pyramid, if gross primary production in an ecosystem was 10,000 kcal/m^2/year, the energy available to herbivores would be_____ kcal/m^2/year.

A. 100,000
B. 10,000
C. 1,000
D. 100

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Evaluating
Level of difficulty: Moderate

19. The energy lost as energy passes from one trophic level to another is about:

A. 1%
B. 10%
C. 90%
D. 100%

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Understanding
Level of difficulty: Moderate

20. The energy in food molecules is released by the process of:

A. photosynthesis.
B. autotrophy.
C. cellular respiration.
D. the carbon cycle.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Understanding

Level of difficulty: Easy

21. In an African grassland ecosystem, lions and other top carnivores are less abundant than the vast herds of wildebeest, antelopes, and other grazing herbivores. In terms of energy, which of the following statements best explains this observation?

A. Top carnivores are endangered.
B. Energy is lost in cellular respiration at each trophic level of a food web.
C. Lions and other top carnivores are more active than herbivores.
D. Lions expend much energy in bringing down their prey.

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Evaluating
Level of difficulty: Moderate

22. The group of organisms in an ecosystem that are essential for recycling of matter are:

A. producers.
B. primary consumers.
C. omnivores.
D. decomposers.

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Understanding
Level of difficulty: Easy

23. In the food web below, which trophic level would have the most biomass?

Grass → grasshopper → quail → hawk

A. Grass
B. Grasshopper
C. Quail
D. Hawk

ANS: A
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Applying
Level of difficulty: Easy

24. In a forest fire:

A. matter is destroyed.
B. matter changes form.
C. both energy and matter are transformed.
D. matter is converted to energy.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Evaluating
Level of difficulty: Difficult

25. The recycling of matter in ecosystems depends upon:

A. living organisms.
B. nonliving physical and chemical processes.
C. living and nonliving components of ecosystems.
D. decomposers.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Understanding
Level of difficulty: Moderate

26. Two key biological processes in the global cycling of carbon are:

A. photosynthesis and cellular respiration.
B. cellular respiration and combustion.
C. cellular respiration and sedimentation.
D. erosion and organic decay.

ANS: A
Chapter: 2
Question Type: Multiple choice
Book Section: 2.3
Bloom's level: Understanding
Level of difficulty: Moderate

27. An economy in which decisions about production and consumption are made by businesses and individuals acting out of self-interest is a:

A. subsistence economy.
B. market economy.

C. centrally planned economy.
D. black market.

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.4
Bloom's level: Understanding
Level of difficulty: Easy

28. Which of the following would occur if demand for oil remains constant and the supply of oil increases?

A. The price of oil would increase.
B. The price of oil would remain the same but more would be consumed.
C. The price of oil would decrease.
D. The environmental impact of oil production would decrease.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.4
Bloom's level: Applying
Level of difficulty: Moderate

29. Which of the following would NOT be considered state property?

A. national forests and parks
B. wild game animals
C. navigable rivers
D. the atmosphere

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.4
Bloom's level: Remembering
Level of difficulty: Easy

30. The exchange of goods and services in a market economy is reflective of the:

A. medium of monetary exchange of a particular society.
B. flow and transformation of matter and energy.
C. gold standard for currency.
D. types of property in a society.

ANS: B
Chapter: 2
Question Type: Multiple choice

Book Section: 2.4
Bloom's level: Understanding
Level of difficulty: Easy

31. Which of the following best explains the diagram?

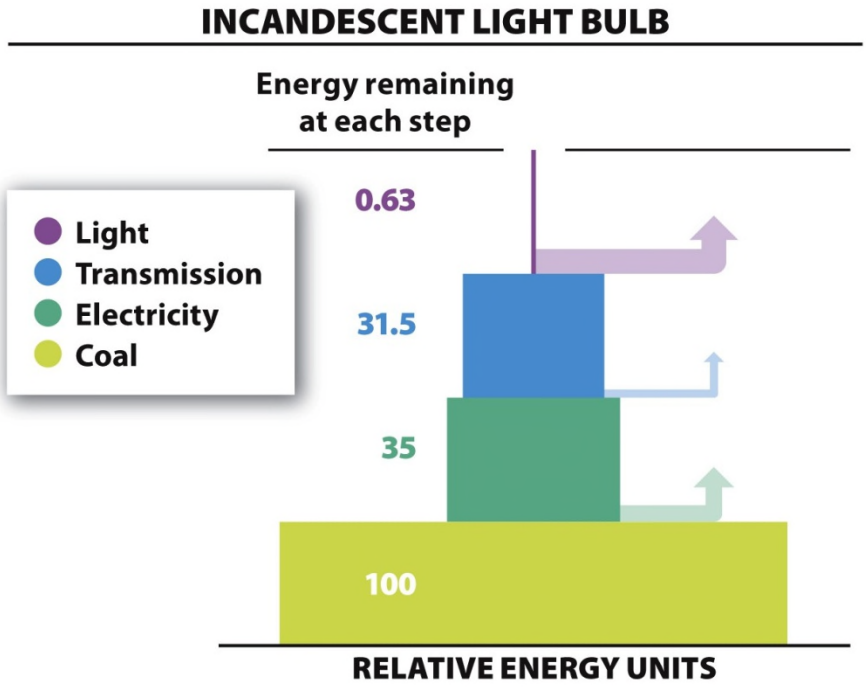

Figure 2.17 part 1
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A. Coal has more energy than electricity.
B. Electricity is a more concentrated form of energy than coal.
C. Electricity is a less concentrated form of energy than coal.
D. Energy is lost when it is converted from one form to another.

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.5
Bloom's level: Understanding
Level of difficulty: Easy

32. How does the second law of thermodynamics apply to economic systems?

A. They require constant inputs of energy.
B. They operate outside the constraints of physical laws.
C. They require inputs of matter but not energy.
D. They are not dependent on natural sources of energy.

ANS: A
Chapter: 2
Question Type: Multiple choice

Book Section: 2.5
Bloom's level: Understanding
Level of difficulty: Moderate

33. Acting in a positive feedback loop, an increase in overall consumer demand for goods and services leads to:

A. a decrease in supply.
B. an increase in demand.
C. an increase in both supply and demand.
D. an increase in supply and a decrease in demand.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.6
Bloom's level: Applying
Level of difficulty: Difficult

34. A simplification of a closed model economic system is that it:

A. does not represent the exchanges of energy and materials between it and the environment.
B. represents demand but not supply.
C. cannot represent the positive feedback loops that exist in actual economic systems.
D. represents goods and services but not labor and wages.

ANS: A
Chapter: 2
Question Type: Multiple choice
Book Section: 2.6
Bloom's level: Applying
Level of difficulty: Moderate

35. In an open economic system model,:

A. exchanges of energy and materials between the economic system and environment are represented.
B. exchanges of energy but not materials between the economic system and the environment are represented.
C. the economic system operates independently of the environment.
D. wastes are retained within the economic system.

ANS: A
Chapter: 2
Question Type: Multiple choice
Book Section: 2.6
Bloom's level: Understanding

Level of difficulty: Moderate

36. Which of the following best describes an external cost?

A. a cost that is paid by the consumer of a good or service
B. a cost that is passed on to society at large or to a future generation
C. a cost that is paid by the producer of a good or service
D. a cost that is shared by both the producer and consumer of a good or service

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.6
Bloom's level: Understanding
Level of difficulty: Easy

37. A cost or benefit that is NOT included in the market price of a good or service is:

A. a negative feedback.
B. a positive feedback.
C. an externality.
D. a common pool resource.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.6
Bloom's level: Understanding
Level of difficulty: Easy

38. A company is permitted to dump a percentage of its wastes into a local river. Which of the following best describes the economic impact of this practice?

A. It would require the company to raise its prices.
B. The environmental costs would not be reflected in the prices consumers pay.
C. The practice would not be included in an open economic system model.
D. It would require the company to reduce its prices.

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.6
Bloom's level: Applying
Level of difficulty: Easy

39. When a common-pool resource is available to everyone to use as they see fit,:

A. no one bothers to use the resource.
B. the total benefit or profit to the community increases.

C. as the total cost increases, individuals will limit their use of the resource.
D. it is rapidly over-exploited and degraded.

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.7
Bloom's level: Understanding
Level of difficulty: Moderate

40. In the common grazing arrangement described by Garrett Hardin in his essay, "Tragedy of the Commons," the eventual result is that:

A. the total benefit or profit to the community increases.
B. individuals will be restrained by the damage their livestock herd does to the pasture.
C. the cost of overgrazing to each farmer is proportional to the number of livestock they own.
D. the productivity of the pasture will decline, and all the farmers suffer the loss.

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.7
Bloom's level: Applying
Level of difficulty: Moderate

41. Which of the following would NOT be considered a common-pool resource?

A. public grazing land
B. marine fisheries
C. rivers
D. a privately owned forest

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.7
Bloom's level: Understanding
Level of difficulty: Easy

42. The management of the environmental impacts of industries and activities through the use of subsidies and penalties is called:

A. economic externalities.
B. common-pool resources.
C. command and control regulation.
D. market based approach.

ANS: C

Chapter: 2
Question Type: Multiple choice
Book Section: 2.7
Bloom's level: Understanding
Level of difficulty: Easy

43. A practical way to address the external cost of traffic damage to roads is to:

A. ban the use of heavy trucks from public roads.
B. assess a tax on gasoline.
C. assess a tax on all the residents of a community.
D. subsidize research into alternative forms of transportation.

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.8
Bloom's level: Understanding
Level of difficulty: Easy

44. The branch of economics that draws mainly from economic theory and practices to assess and manage the costs and benefits of economic impacts on the environment is:

A. environmental economics.
B. ecological economics.
C. command and control regulation.
D. market based approach.

ANS: A
Chapter: 2
Question Type: Multiple choice
Book Section: 2.8
Bloom's level: Understanding
Level of difficulty: Moderate

45. The branch of economics that studies the relationship between economic activity and its impact on natural capital is:

A. environmental economics.
B. ecological economics.
C. command and control regulation.
D. market based approach.

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.8
Bloom's level: Understanding

Level of difficulty: Moderate

46. The branch of economics that is focused on sustaining the natural capital that provides humans with a flow of goods and services is:

A. environmental economics.
B. ecological economics.
C. command and control regulation.
D. supply and demand.

ANS: B
Chapter: 2
Question Type: Multiple choice
Book Section: 2.8
Bloom's level: Understanding
Level of difficulty: Moderate

47. A forested valley that provides clean water would be considered:

A. state property.
B. common property.
C. an ecosystem service.
D. a common-pool resource.

ANS: C
Chapter: 2
Question Type: Multiple choice
Book Section: 2.8
Bloom's level: Understanding
Level of difficulty: Easy

48. A management system that employs the principles of supply and demand to advance social or environmental goals is:

A. economic externalities.
B. Pigovian taxes.
C. ecological economics.
D. market based approach.

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.9
Bloom's level: Understanding
Level of difficulty: Easy

49. Market based approaches have been suggested to manage the water scarcity in the arid western United States. What might be a drawback of a system that would allow farmers to sell their water allocations to other residents or communities?

A. Farmers would shift to growing less water intensive crops.
B. Farmers would adopt more efficient irrigation technologies.
C. City and suburban residents would have to evaluate their outdoor water use.
D. Higher water prices might create economic hardships to low income residents.

ANS: D
Chapter: 2
Question Type: Multiple choice
Book Section: 2.9
Bloom's level: Evaluating
Level of difficulty: Difficult

50. A rural community has decided to manage their water resources as a common-pool resource. Which of the following would be most useful in making a community irrigation project sustainable and successful?

A. The amount of water each farmer could use should be proportional to their contribution in maintaining the irrigation system.
B. Each farmer should be allowed to use the same amount of water.
C. The amount of water used by farmers should not change over the year.
D. The irrigation project should be managed by a government agency rather than local residents.

ANS: A
Chapter: 2
Question Type: Multiple choice
Book Section: 2.9
Bloom's level: Evaluating
Level of difficulty: Difficult

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