CHAPTER 1: Environmental Science and Sustainability: What's the Big Idea?

MULTIPLE CHOICE

1. Ecosystem services provide
   a. oxygen.
   b. food and water.
   c. energy.
   d. All of these are correct.

   ANS: D DIF: Easy
   REF: 1.1 What Is the Environment, and What Is an Ecosystem?
   OBJ: 1.A. Describe the range of ways in which humans affect the environment.
   MSC: Remembering

2. Only when all of the parts of an automobile are assembled does it become a functional vehicle. In this way, an automobile is best defined as a(n)
   a. component.
   b. interaction.
   c. system.
   d. niche.

   ANS: C DIF: Moderate
   REF: 1.1 What Is the Environment, and What Is an Ecosystem?
   OBJ: 1.A. Describe the range of ways in which humans affect the environment.
   MSC: Understanding

3. The Mississippi River delivers runoff from farms in the Midwest to the waters of the Gulf of Mexico. Excess fertilizer enters the Gulf, resulting in a Dead Zone, or water area that cannot support life. As a shrimp farmer, you are concerned about how this affects the _____ of the Gulf.
   a. ecosystem services
   b. competition among shrimp
   c. ecological footprint
   d. agricultural impact

   ANS: A DIF: Moderate
   REF: 1.1 What Is the Environment, and What Is an Ecosystem?
   OBJ: 1.A. Describe the range of ways in which humans affect the environment.
   MSC: Applying

4. The _____ refers to all of the living and nonliving things on Earth that sustain life.
   a. environment
   b. population
   c. Anthropocene
   d. community

   ANS: A DIF: Easy
   REF: 1.1 What Is the Environment, and What Is an Ecosystem?
   OBJ: 1.A. Describe the range of ways in which humans affect the environment.
   MSC: Remembering

5. A coral reef ecosystem could include which list of components?
   a. sponges, sea anemones, and fish
   b. coral, sunlight, and water
   c. minerals, microscopic organisms, and worms
   d. All of these are correct.

   ANS: D DIF: Moderate
   REF: 1.1 What Is the Environment, and What Is an Ecosystem?
   OBJ: 1.A. Describe the range of ways in which humans affect the environment.
   MSC: Understanding

6. Some scientists have proposed the _____ as a new epoch that encompasses the period in Earth's history during which humans have had a dominant influence over the environment.
   a. Mesozoic
   b. Anthropocene
   c. Holocene
   d. Pleistocene

   ANS: B DIF: Easy
   REF: 1.1 What Is the Environment, and What Is an Ecosystem?
   OBJ: 1.A. Describe the range of ways in which humans affect the environment.
   MSC: Remembering

7. The 3 Es that serve as key considerations for sustainability efforts are
   a. environment, economy, equity.
   b. ecology, equity, energy.
   c. economy, energy, environment.
   d. ecosystem, environment, ethics.

   ANS: A DIF: Moderate REF: 1.2 What Is Sustainability?
   OBJ: 1.B. Explain the meaning of sustainability and ways it relates to human development.
   MSC: Remembering

8. The ability of an environment to absorb damage and recover quickly is known as ecological
   a. capacity.
   b. resilience.
   c. plasticity.
   d. strength.

   ANS: B DIF: Easy REF: 1.2 What Is Sustainability?
   OBJ: 1.B. Explain the meaning of sustainability and ways it relates to human development.
   MSC: Remembering

9. Fossil fuel combustion from millions of cars contributes to air pollution and climate change. Given this information, which is the best example of sustainability in transportation?
   a. driving yourself to class early in order to get a good seat
   b. carpooling with friends to a weekend camping trip
   c. taking the city bus across town to get groceries
   d. walking to work in order to avoid traffic congestion

   ANS: D DIF: Moderate REF: 1.2 What Is Sustainability?
   OBJ: 1.B. Explain the meaning of sustainability and ways it relates to human development.
   MSC: Applying

10. Along the coastline of the Gulf of Mexico, salt marshes accumulate sediment that helps them recover from damaging storm surges. These salt marshes increase the _____ of the ecosystem.
    a. resilience
    b. feedback
    c. development
    d. cycling

    ANS: A DIF: Moderate REF: 1.2 What Is Sustainability?
    OBJ: 1.B. Explain the meaning of sustainability and ways it relates to human development.
    MSC: Applying

11. The Native peoples of the Pacific Northwest practiced sustainability by
    a. using traditional fish traps produced with local groves of oak trees.
    b. following rituals and rules that allowed a large share of salmon to reproduce.
    c. maximizing harvest yield using highly efficient large nets and traps.
    d. All of these are correct.

    ANS: B DIF: Moderate REF: 1.2 What Is Sustainability?
    OBJ: 1.B. Explain the meaning of sustainability and ways it relates to human development.
    MSC: Understanding

12. Sustainable development applies to which resource types(s)?
    a. populations of commercially harvested fish
    b. timber stands used for logging
    c. freshwater taken from a river for irrigating crops
    d. All of these are correct.

    ANS: D DIF: Moderate REF: 1.2 What Is Sustainability?
    OBJ: 1.B. Explain the meaning of sustainability and ways it relates to human development.
    MSC: Understanding

13. Chronic overfishing disrupts a coral reef ecosystem, making the reef more susceptible to bleaching and resulting in die-off events rather than recovering. In this example, the result of human impact is _____ of the coral reef.
    a. biased management
    b. sustainable development
    c. reduced resilience
    d. diminished equity

    ANS: C DIF: Moderate REF: 1.2 What Is Sustainability?
    OBJ: 1.B. Explain the meaning of sustainability and ways it relates to human development.
    MSC: Applying

14. A student in the cafeteria states that composting food waste would significantly increase the sustainability of school operations. This statement is best described as a(n)
    a. observation.
    b. experiment.
    c. hypothesis.
    d. model.

    ANS: C DIF: Moderate REF: 1.3 What Is Science?
    OBJ: 1.C. Summarize how the scientific method works. MSC: Applying

15. A(n) _____ is a test in which researchers intentionally manipulate some aspect of a system and compare the changed system to an unaltered one.
    a. controlled experiment
    b. natural experiment
    c. observational study
    d. modeled study

    ANS: A DIF: Easy REF: 1.3 What Is Science?
    OBJ: 1.C. Summarize how the scientific method works. MSC: Remembering

16. Models are often used to
    a. test natural phenomena that are explained by a single factor.
    b. examine a system in which multiple factors interact.
    c. compute the relationships between all aspects of a real system.
    d. validate the peer-review process prior to publication.

    ANS: B DIF: Easy REF: 1.3 What Is Science?
    OBJ: 1.C. Summarize how the scientific method works. MSC: Remembering

17. Controlled experiments are most appropriate for testing which of these hypotheses?
    a. A meteorite collision with Earth caused the extinction of the dinosaurs.
    b. Diets high in saturated fats cause cardiovascular disease in humans.
    c. Increased carbon dioxide levels in the atmosphere have caused global temperatures to rise.
    d. Introduction of water-recycling systems conserves water and reduces factory-operating costs.

    ANS: D DIF: Difficult REF: 1.3 What Is Science?
    OBJ: 1.C. Summarize how the scientific method works. MSC: Analyzing

18. Which phrase best describes the scientific method?
    a. collection of facts
    b. linear series of steps
    c. ongoing process
    d. natural experiment

    ANS: C DIF: Easy REF: 1.3 What Is Science?
    OBJ: 1.C. Summarize how the scientific method works. MSC: Remembering

19. The mass extinction event 65 million years ago in which the dinosaurs went extinct is believed to have been caused by a large asteroid striking Earth. Evidence in support of this hypothesis includes the discovery of material common to asteroids within a layer of Earth that dates to the time of the extinction. In addition, a large crater was discovered with the expected date and size of such an asteroid impact. The fossil record indicates there were four other mass extinction events. Which of the following experimental results support(s) a hypothesis that all mass extinction events were caused by asteroid strikes?
    a. Craters of various sizes are present throughout the fossil record.
    b. Deposits of volcanic ash correlate with other indicators of major climate shifts.
    c. Layers of Earth that date to the time of each mass extinction event contain the material common to asteroids.
    d. All of these are correct.

    ANS: C DIF: Difficult REF: 1.3 What Is Science?
    OBJ: 1.C. Summarize how the scientific method works. MSC: Analyzing

20. Select the scientific hypothesis.
    a. Both the intensity and frequency of hurricanes have increased since the 1980s.
    b. Ethically, it is better to use reusable cloth bags for shopping.
    c. Most ghosts are friendly.
    d. None of these are correct.

    ANS: D DIF: Difficult REF: 1.3 What Is Science?
    OBJ: 1.C. Summarize how the scientific method works. MSC: Analyzing

21. In order to test a climate model, researchers plugged in initial conditions from a known starting point in the past. The results matched up well with what actually happened in the current time period. This exercise is known as
    a. hindcasting.
    b. pseudoscience.
    c. forecasting.
    d. a natural experiment.

    ANS: A DIF: Easy REF: 1.3 What Is Science?
    OBJ: 1.C. Summarize how the scientific method works. MSC: Remembering

22. Juanita and Robert have four daughters together and Juanita is currently pregnant with their fifth child. The couple tells a neighbor, "After four girls, we're confident this one will be a boy because we are due for a son." Which concept best explains this statement?
    a. resilience
    b. peer review
    c. fraud
    d. bias

    ANS: D DIF: Moderate REF: 1.4 What Are Challenges to Good Science?
    OBJ: 1.D. Distinguish among the various methods of observation and testing involved in scientific inquiry. MSC: Understanding

23. Prior to publication in a scientific journal, an article must undergo the process of peer review. In this process, "peer" refers to which group?
    a. independent experts in the field of study
    b. all authors of the research article
    c. subscribers to a particular journal
    d. random members of the scientific community

    ANS: A DIF: Easy REF: 1.4 What Are Challenges to Good Science?
    OBJ: 1.D. Distinguish among the various methods of observation and testing involved in scientific inquiry. MSC: Remembering

24. _____ refers to an attempt to deceive people by communicating findings that are simply false.
    a. Fraud
    b. Bias
    c. Misinformation
    d. Skepticism

    ANS: A DIF: Easy REF: 1.4 What Are Challenges to Good Science?
    OBJ: 1.D. Distinguish among the various methods of observation and testing involved in scientific inquiry. MSC: Remembering

25. Select the phrase that best defines an aspect of pseudoscience.
    a. obtains results through hindcasting
    b. relies on observational studies
    c. oversimplifies a complex process
    d. blocks findings from scientific scrutiny

    ANS: D DIF: Easy REF: 1.4 What Are Challenges to Good Science?
    OBJ: 1.D. Distinguish among the various methods of observation and testing involved in scientific inquiry. MSC: Remembering

26. A rumor that is false but widely believed is a good example of
    a. misinformation.
    b. skepticism.
    c. peer review.
    d. bias.

    ANS: A DIF: Moderate REF: 1.4 What Are Challenges to Good Science?
    OBJ: 1.D. Distinguish among the various methods of observation and testing involved in scientific inquiry. MSC: Understanding

27. Select the process that prevents the publication of pseudoscience in a scientific journal.
    a. fraud analysis
    b. peer review
    c. bias valuation
    d. misinformation index

    ANS: B DIF: Easy REF: 1.4 What Are Challenges to Good Science?
    OBJ: 1.D. Distinguish among the various methods of observation and testing involved in scientific inquiry. MSC: Understanding

28. Sam decides to bike instead of drive across campus to class because she cares about reducing her environmental impact. This desire for how she wants things to be reflects her
    a. values.
    b. bias.
    c. misinformation.
    d. trade-offs.

    ANS: A DIF: Easy
    REF: 1.5 What Shapes Our Decisions on the Environment?
    OBJ: 1.E. Identify ways in which values influence our individual and collective responses to environmental issues. MSC: Understanding

29. Ten states have “bottle-bill” laws that require a deposit for products sold in recyclable containers, which you can then get back if you bring the container to a recycling location. This is an example of a(n)
    a. footprint strategy.
    b. trade-off.
    c. incentive.
    d. value bias.

    ANS: C DIF: Easy
    REF: 1.5 What Shapes Our Decisions on the Environment?
    OBJ: 1.E. Identify ways in which values influence our individual and collective responses to environmental issues. MSC: Applying

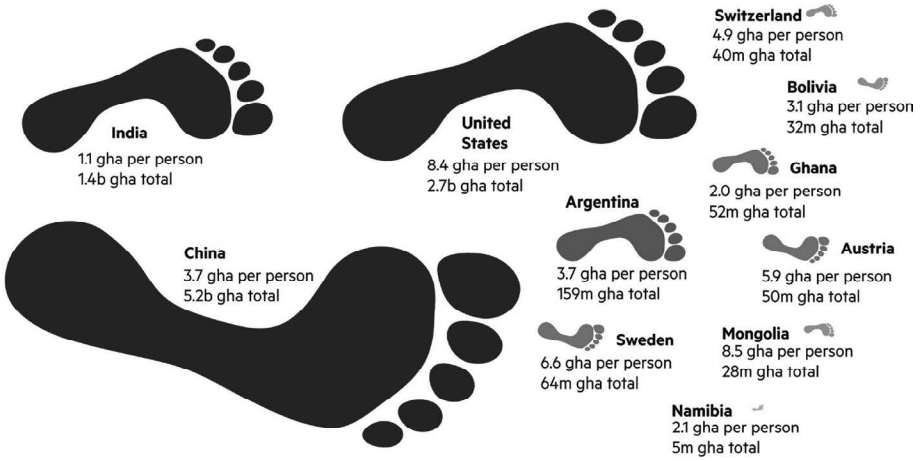
30. The process of science is best described as a
    a. method for making ethical judgments.
    b. mechanism for refining our values.
    c. collection of facts.
    d. tool for understanding the natural world.

    ANS: D DIF: Easy
    REF: 1.5 What Shapes Our Decisions on the Environment?
    OBJ: 1.E. Identify ways in which values influence our individual and collective responses to environmental issues. MSC: Understanding

31. Ecological footprint analysis is a method used to understand the
    a. fossil record for evidence of mass extinctions.
    b. impact of choices on the environment.
    c. range of ecosystem services generated by species.
    d. rigor of scientific studies.

    ANS: B DIF: Easy
    REF: 1.5 What Shapes Our Decisions on the Environment?
    OBJ: 1.E. Identify ways in which values influence our individual and collective responses to environmental issues. MSC: Remembering

32. The three countries with the largest ecological footprints are the United States, China, and India.



    Given that the populations of these countries are 320 million (United States), 1.4 billion (China), and 1.3 billion (India), which of the statements is correct?
    a. The average footprint for an individual is smaller in the United States than in China or India.
    b. Countries with larger populations use more resources than countries with smaller populations.
    c. The average footprint for an individual is larger in the United States than in China or India.
    d. None of these is correct.

    ANS: C DIF: Moderate
    REF: 1.5 What Shapes Our Decisions on the Environment?
    OBJ: 1.E. Identify ways in which values influence our individual and collective responses to environmental issues. MSC: Understanding

33. Denecha lowers the temperature on her water heater in order to use less natural gas and save money. After making this change, she discovers that the water needs to run longer in order to warm up enough to shower. Weighing the pros of using less energy against the cons of using more water is an example of
    a. modeling.
    b. resilience.
    c. bias analysis.
    d. trade-offs.

    ANS: D DIF: Moderate
    REF: 1.5 What Shapes Our Decisions on the Environment?
    OBJ: 1.E. Identify ways in which values influence our individual and collective responses to environmental issues. MSC: Understanding

34. In the hallway outside your classroom, a water-bottle refill station encourages the use of reusable containers rather than single-use plastic water bottles. The digital display quantifies the number of water bottles saved from the landfill as a result of using the refill station. This example of a _____ increases awareness of the costs and benefits of an everyday decision.
    a. trade-off
    b. communication strategy
    c. footprint analysis
    d. value inquiry

    ANS: B DIF: Easy
    REF: 1.5 What Shapes Our Decisions on the Environment?
    OBJ: 1.E. Identify ways in which values influence our individual and collective responses to environmental issues. MSC: Understanding

35. The ecological footprint of the average U.S. citizen is significantly larger than the global average. What would happen if all humans on Earth each had an ecological footprint that matched that of a typical American?
    a. The need for ecological services would decrease.
    b. The global usage of resources would become much less sustainable.
    c. The balance of the 3 Es would shift more to economy.
    d. All of these are correct.

    ANS: B DIF: Moderate
    REF: 1.5 What Shapes Our Decisions on the Environment?
    OBJ: 1.E. Identify ways in which values influence our individual and collective responses to environmental issues. MSC: Applying

SHORT ANSWER

1. Define an ecosystem and describe the specific components of an ecosystem that is located where you live.

    ANS:
    An ecosystem is a community of life and the physical environment with which it interacts. Descriptions of local ecosystems will vary, but they should include both the living and nonliving components. For example, a forest will include populations of plants and animals as well as the soil, water, and local climate.

    DIF: Moderate REF: 1.1 What Is the Environment, and What Is an Ecosystem?
    OBJ: 1.A. Describe the range of ways in which humans affect the environment.
    MSC: Understanding | Applying

2. Define sustainable development.

   ANS:
   Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs. Examples of sustainability efforts at a college campus may include power generation from renewable sources, new building construction to LEED standards, recycling, water conservation, busing, energy efficient lighting, composting of food scraps, and local sourcing of cafeteria foods.

   DIF: Easy REF: 1.2 What Is Sustainability?
   OBJ: 1.B. Explain the meaning of sustainability and ways it relates to human development.
   MSC: Understanding

3. In the process of coral bleaching, coral weakens and turns white. Potential causes include the warming and increased acidity of the ocean. A study proposes to test the role of pH level by increasing the acidity of water in an isolated portion of a coral reef for one month and then evaluating the response of the coral. Is this a controlled experiment? Explain.

   ANS:
   This is not a controlled experiment. The study fails to account for the role of other factors, such as temperature, on the health of the coral. A more controlled experiment would divide an isolated area of reef into a test group, with exposure to increased acidity, and a control group, with conditions identical to the test group except that the water has a normal pH level.

   DIF: Difficult REF: 1.3 What Is Science?
   OBJ: 1.C. Summarize how the scientific method works. MSC: Analyzing

4. Julie and Mark have a one-year old son, Kliff. Based on an advertisement, they purchase a subscription to online streaming of "Baby Smart: Guaranteed!" The advertisement claims the product will speed up intellectual development, but fails to describe or reference any supporting studies. How would a friend identify the issue with the product claim and explain how this violates the scientific process?

   ANS:
   The advertisement claim is based in pseudoscience, not the result of scientific inquiry. By failing to describe or reference any studies, the process is not open to scientific scrutiny. In a scientific study, the methodology, such as how intellectual development is measured, must be described in sufficient detail for other researchers to replicate the findings. In addition, a proper study would include controls, such as a control group of children who were not exposed to the product, but whose intellectual development was measured the same way.

   DIF: Moderate REF: 1.4 What Are Challenges to Good Science?
   OBJ: 1.D. Distinguish among the various methods of observation and testing involved in scientific inquiry. MSC: Analyzing

5. The production and disposal of material goods affects the environment. Therefore, decisions regarding the consumption of goods impacts our personal ecological footprint. Consider all your purchases over the last week. Which of these items were not necessary to purchase? Could any of these items be reused, recycled, or composted?

   ANS:
   Answers will vary, but typical consumption items may include groceries, cosmetics, fast food or junk food, apparel, soft drinks, bottled water, electronics, and toys. Items such as outgrown clothes can be donated and reused by others. Aluminum cans, plastic containers, and paper products can be recycled. Food scraps can be composted.

   DIF: Moderate
   REF: 1.5 What Shapes Our Decisions on the Environment? | 1.6 What Can I Do?
   OBJ: 1.E. Identify ways in which values influence our individual and collective responses to environmental issues. MSC: Applying| Evaluating

CHAPTER 2: Ethics, Economics, and Policy: Who or What Do We Value?

MULTIPLE CHOICE

1. If you believe that electric vehicles preserve a clean and functioning environment, to which we all have a right, and therefore you purchase an electric vehicle, your decision is based on
   a. policy.
   b. ethics.
   c. supply and demand.
   d. ecosystem services.

   ANS: B DIF: Easy REF: 2.1 How Does Ethics Influence Our Decisions?
   OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
   MSC: Understanding

2. The idea that prisoners have rights to basic standards of treatment, regardless of their crime, is one application of
   a. ecocentrism.
   b. the tragedy of the commons.
   c. amoral behavior.
   d. deontological ethics.

   ANS: D DIF: Moderate REF: 2.1 How Does Ethics Influence Our Decisions?
   OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
   MSC: Applying

3. Many people would say that a forest has importance in and of itself, separate from the value of the lumber or other materials that could be removed. This would be considered a(n)
   a. intrinsic value.
   b. extrinsic value.
   c. supply.
   d. All of these are correct.

   ANS: A DIF: Easy REF: 2.1 How Does Ethics Influence Our Decisions?
   OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
   MSC: Understanding

4. In 2000, the United Nations established 16 principles that should guide the protection of the environment. This document is referred to as the
   a. Environmental Policy Declaration.
   b. Treaty for the World.
   c. Earth Charter.
   d. Ecocentric Guide.

   ANS: C DIF: Easy REF: 2.1 How Does Ethics Influence Our Decisions?
   OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
   MSC: Remembering

5. Public health experts recommend that all children be vaccinated against a range of infectious diseases. While there may be a small number of children who have a negative side effect from the vaccine, many more will have the benefits of avoiding these painful and potentially deadly illnesses. Using these principles to guide decision making on vaccination demonstrates
   a. ecocentrism.
   b. utilitarianism.
   c. intrinsic value.
   d. deontological ethics.

   ANS: B DIF: Moderate REF: 2.1 How Does Ethics Influence Our Decisions?
   OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
   MSC: Applying

6. A company is preparing a report on the impact of creating a new landfill in a community, which is divided into sections assessing the various impacts. The section of the report detailing potential contamination of the drinking water, added air pollution, and other factors that will affect the residents of the community would be summarized as a _____ view of the impact.
   a. ecocentric
   b. biocentric
   c. anthropocentric
   d. utilitarian

   ANS: C DIF: Moderate REF: 2.1 How Does Ethics Influence Our Decisions?
   OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
   MSC: Understanding

7. A company is preparing a report on the impact of creating a new landfill in a community, which is divided into sections assessing the various impacts. The section of the report that focused on the impacts on the wildlife in the area and the loss of biodiversity of plant species and other living things would be summarized as a _____ view of the impact.
   a. ecocentric
   b. biocentric
   c. anthropocentric
   d. utilitarian

   ANS: B DIF: Moderate REF: 2.1 How Does Ethics Influence Our Decisions?
   OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
   MSC: Understanding

8. Which of the following would be considered part of an ecocentric view of the environment?
   a. humans
   b. water
   c. soil
   d. All of these are correct.

   ANS: D DIF: Easy REF: 2.1 How Does Ethics Influence Our Decisions?
   OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
   MSC: Remembering

9. One factor that would differ between a biocentric view of a lake and an ecocentric view of a lake would be the
   a. fish in the lake.
   b. water in the lake.
   c. birds on the lake.
   d. None of these are correct.

   ANS: B DIF: Moderate REF: 2.1 How Does Ethics Influence Our Decisions?
   OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
   MSC: Understanding

10. Utilitarianism is often controversial because
    a. people have different opinions on what are considered good and bad consequences.
    b. most people do not care about the environment.
    c. it is obvious who will benefit and what the costs will be.
    d. All of these are correct.

    ANS: A DIF: Difficult REF: 2.1 How Does Ethics Influence Our Decisions?
    OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
    MSC: Understanding

11. “Every form of life has value regardless of its worth to human beings.” This statement from the Earth Charter is referencing
    a. ethics.
    b. intrinsic value.
    c. anthropocentrism.
    d. the public good.

    ANS: B DIF: Easy REF: 2.1 How Does Ethics Influence Our Decisions?
    OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
    MSC: Remembering

12. Just as with oil, coffee is traded as a commodity on exchange markets. More than 50 countries around the world produce coffee beans, the sum production of which is considered the _____ of coffee.
    a. supply
    b. demand
    c. value
    d. index

    ANS: A DIF: Easy
    REF: 2.2 How Are the Environment and the Economy Connected?
    OBJ: 2.B. Understand what the terms supply and demand mean in economics.
    MSC: Applying

13. Coffee buyers from four main companies are responsible for almost half of all coffee purchased on the commodity markets. The rest is purchased by smaller companies and individuals. Together, they all make up the _____ for coffee.
    a. supply
    b. demand
    c. value
    d. index

    ANS: B DIF: Easy
    REF: 2.2 How Are the Environment and the Economy Connected?
    OBJ: 2.B. Understand what the terms supply and demand mean in economics.
    MSC: Applying

14. The commodities exchange where buyers of coffee can interact with those who have coffee for sale, can be defined as a
    a. policy.
    b. supply.
    c. boycott.
    d. market.

    ANS: D DIF: Easy
    REF: 2.2 How Are the Environment and the Economy Connected?
    OBJ: 2.B. Understand what the terms supply and demand mean in economics.
    MSC: Remembering

15. The cost of solar panels has decreased dramatically in the last 10 years, going from over $8/watt to $3/watt. Based on the Jevons paradox, what would you predict should have happened to the demand for solar panels?
    a. The demand should have decreased.
    b. The demand should have increased.
    c. The demand should have stayed the same.
    d. The demand should not be impacted by the price.

    ANS: B DIF: Moderate
    REF: 2.2 How Are the Environment and the Economy Connected?
    OBJ: 2.B. Understand what the terms supply and demand mean in economics.
    MSC: Applying

16. The exchange of goods and services can be summarized as a(n)
    a. economic system.
    b. anthropogenic system.
    c. environmental policy.
    d. public good.

    ANS: A DIF: Easy
    REF: 2.2 How Are the Environment and the Economy Connected?
    OBJ: 2.B. Understand what the terms supply and demand mean in economics.
    MSC: Remembering

17. A new restaurant opens in your town, it only has seating for 10 people, and the reviews are great. Many people call and ask for a reservation, but are told there are no seats available. Soon the restaurant expands and can now seat up to 50 people, now everyone is able to be seated and there are even some empty seats on most nights. This illustrates the effect of
    a. negative externalities.
    b. lobbying for new policies.
    c. the public good.
    d. supply and demand.

    ANS: D DIF: Difficult
    REF: 2.2 How Are the Environment and the Economy Connected?
    OBJ: 2.B. Understand what the terms supply and demand mean in economics.
    MSC: Analyzing

18. Which of the following would be an externality associated with a bar allowing cigarette smoking?
    a. increased lighting in the bar due to the haze of smoke
    b. increased tobacco smoke inside the bar
    c. a nonsmoker being exposed to second-hand tobacco smoke
    d. All of these are correct.

    ANS: D DIF: Easy
    REF: 2.3 How Can Economics Help Us Understand Environmental Problems?
    OBJ: 2.D. Understand how markets often fail to account for all costs and benefits associated with a good or service, leading to environmental harm. MSC: Applying

19. What is an externality associated with a company deciding to dump waste materials in a local stream to reduce costs of disposal?
    a. contaminated drinking water of nearby residents
    b. animals and plants being killed by the waste materials
    c. damaged crops which use water from the local stream
    d. All of these are correct.

    ANS: D DIF: Easy
    REF: 2.3 How Can Economics Help Us Understand Environmental Problems?
    OBJ: 2.D. Understand how markets often fail to account for all costs and benefits associated with a good or service, leading to environmental harm. MSC: Understanding

20. Strict limits are set on the number of cattle that can graze on public lands in the Western United States. This is done to prevent
    a. the ranching companies from earning higher profits.
    b. the cattle from growing too big.
    c. overexploitation and resource degradation.
    d. the demand from increasing.

    ANS: C DIF: Easy
    REF: 2.3 How Can Economics Help Us Understand Environmental Problems?
    OBJ: 2.D. Understand how markets often fail to account for all costs and benefits associated with a good or service, leading to environmental harm. MSC: Understanding

21. The pollination of our fruit crops, which is done by millions of bees every year, is an example of
    a. externalities.
    b. ecosystem services.
    c. biocentrism.
    d. demand.

    ANS: B DIF: Easy
    REF: 2.3 How Can Economics Help Us Understand Environmental Problems?
    OBJ: 2.D. Understand how markets often fail to account for all costs and benefits associated with a good or service, leading to environmental harm. MSC: Understanding

22. State and local governments often provide money for communities to create bike paths. These benefit many in the local community, but are often not developed without government help due to the high costs to private companies. Bike paths are an example of
    a. public goods.
    b. supply and demand.
    c. ecosystem services.
    d. the tragedy of the commons.

    ANS: A DIF: Moderate
    REF: 2.3 How Can Economics Help Us Understand Environmental Problems?
    OBJ: 2.D. Understand how markets often fail to account for all costs and benefits associated with a good or service, leading to environmental harm. MSC: Applying

23. Mangroves are small shrubs and trees in intercostal regions. They protect shorelines from damaging storms, winds, waves, and floods, which have been found to be important in preventing erosion. This aspect of mangroves is considered a(n)
    a. ecosystem service.
    b. policy.
    c. externality.
    d. economic system.

    ANS: A DIF: Moderate
    REF: 2.3 How Can Economics Help Us Understand Environmental Problems?
    OBJ: 2.D. Understand how markets often fail to account for all costs and benefits associated with a good or service, leading to environmental harm. MSC: Applying

24. Which of the following would be considered a negative externality from coal-fired power plants?
    a. increased electricity availability
    b. jobs for those who mine coal
    c. increased rail usage to transport coal
    d. None of these are correct.

    ANS: D DIF: Moderate
    REF: 2.3 How Can Economics Help Us Understand Environmental Problems?
    OBJ: 2.D. Understand how markets often fail to account for all costs and benefits associated with a good or service, leading to environmental harm. MSC: Understanding

25. Positive externalities and public goods are often _____ due to the difficulty in assigning specific value.
    a. undersupplied
    b. oversupplied
    c. absent from communities
    d. easily replaced

    ANS: A DIF: Easy
    REF: 2.3 How Can Economics Help Us Understand Environmental Problems?
    OBJ: 2.D. Understand how markets often fail to account for all costs and benefits associated with a good or service, leading to environmental harm. MSC: Remembering

26. Governments create laws and regulations that specify the actions and behaviors of its citizens and organizations. These laws and regulations are called
    a. ecosystem services.
    b. public goods.
    c. ethics.
    d. policies.

    ANS: D DIF: Easy REF: 2.4 Why Do We Have Environmental Policy?
    OBJ: 2.E. Describe how policies influence our behavior and affect our environmental impact, and name some important environmental policies in the United States.
    MSC: Remembering

27. If an automobile manufacturer has been shown to be engaging in unethical behaviors, one way to lead to change is through a boycott. Which of the following is an example of a boycott?
    a. buying a car from this manufacturer and then selling it quickly
    b. refusing to purchase a car from this manufacturer and encouraging others do to the same
    c. leaving negative reviews of the company on social media websites
    d. refusing to ride in any cars made by that manufacturer

    ANS: B DIF: Moderate REF: 2.4 Why Do We Have Environmental Policy?
    OBJ: 2.E. Describe how policies influence our behavior and affect our environmental impact, and name some important environmental policies in the United States.
    MSC: Understanding

28. What is a positive externality that results from high oil prices?
    a. increased air and water pollution
    b. noise pollution from heavy equipment used in oil extraction
    c. innovation in oil extracting technologies
    d. higher gasoline prices

    ANS: C DIF: Moderate REF: 2.4 Why Do We Have Environmental Policy?
    OBJ: 2.E. Describe how policies influence our behavior and affect our environmental impact, and name some important environmental policies in the United States.
    MSC: Understanding

29. Which of the following is an example of environmental policy implemented by the U.S. government?
    a. the establishment of the national parks
    b. the U.S. Fish and Wildlife Service
    c. the Clean Water Act
    d. All of these are correct.

    ANS: D DIF: Easy REF: 2.4 Why Do We Have Environmental Policy?
    OBJ: 2.E. Describe how policies influence our behavior and affect our environmental impact, and name some important environmental policies in the United States.
    MSC: Understanding

30. In what ways can politics influence policy decisions?
    a. Groups with common interests can support like-minded candidates for office.
    b. Groups with common interests compete to get their optimal policy outcome by lobbying political figures.
    c. Groups with common interests can mobilize public opinion on a topic.
    d. All of these are correct.

    ANS: D DIF: Difficult REF: 2.4 Why Do We Have Environmental Policy?
    OBJ: 2.E. Describe how policies influence our behavior and affect our environmental impact, and name some important environmental policies in the United States.
    MSC: Understanding

31. Issues such as climate change are too large for any single country to solve. Which of these has been an effective way to address issues such as global climate change?
    a. Each individual country can decide its own actions.
    b. Larger countries dictate what smaller countries will do.
    c. Countries collaborate through an intergovernmental organization.
    d. Issues are addressed by increasing the power of lobbyists.

    ANS: C DIF: Easy REF: 2.4 Why Do We Have Environmental Policy?
    OBJ: 2.E. Describe how policies influence our behavior and affect our environmental impact, and name some important environmental policies in the United States.
    MSC: Understanding

32. If a government wanted to increase the use of wind power by its residents, which of the following could be implemented?
    a. decrease taxes on fossil fuels to reduce their costs
    b. encourage use of other forms of energy, such as solar
    c. apply tax credits for those who use nuclear power for electricity
    d. purchase wind turbines that can be used to generate electricity

    ANS: D DIF: Difficult REF: 2.4 Why Do We Have Environmental Policy?
    OBJ: 2.E. Describe how policies influence our behavior and affect our environmental impact, and name some important environmental policies in the United States.
    MSC: Understanding

33. What of the following is a role of the Environmental Protection Agency (EPA) in regulating pollution?
    a. The EPA sets minimum standards for pollutants.
    b. The EPA passes legislation on drinking water standards.
    c. The EPA prioritizes hazardous waste sites for cleanup.
    d. All of these are correct.

    ANS: D DIF: Moderate REF: 2.4 Why Do We Have Environmental Policy?
    OBJ: 2.E. Describe how policies influence our behavior and affect our environmental impact, and name some important environmental policies in the United States.
    MSC: Remembering

34. Environmental policies can include those that manage natural resources. Which of the following actions was done by the U.S. government for this purpose?
    a. the establishment of pollution standards
    b. designating Superfund sites
    c. passing of the Resource Conservation and Recovery Act
    d. the establishment of the first national park, Yellowstone

    ANS: D DIF: Moderate REF: 2.4 Why Do We Have Environmental Policy?
    OBJ: 2.E. Describe how policies influence our behavior and affect our environmental impact, and name some important environmental policies in the United States.
    MSC: Understanding

35. Consider the following statement: all policies on environmental health are enacted by the federal government.
    a. This statement is correct: states only enforce federal policies.
    b. This statement is correct: states have no legal authority over their environment.
    c. This statement is incorrect: states can enact and enforce more restrictive policies.
    d. This statement is incorrect provided states pass policies that are less restrictive than the ones passed by the federal government.

    ANS: C DIF: Moderate REF: 2.4 Why Do We Have Environmental Policy?
    OBJ: 2.E. Describe how policies influence our behavior and affect our environmental impact, and name some important environmental policies in the United States.
    MSC: Understanding

SHORT ANSWER

1. A state has decided to build a new interstate highway that will require the draining of a wetland. Compare how an anthropocentric and ecocentric view would differ when considering the impacts of this development.

    ANS:
    An anthropocentric view would only consider the impacts on humans. Examples could include the fact that some people would be displaced from their homes, that travel might become easier, or commuting times could improve. Someone taking an ecocentric view would also consider the impacts on other living and nonliving things, such as the impacts on the animals and plants in the wetlands, along with those on air, water, and geological formations.

    DIF: Moderate REF: 2.1 How Does Ethics Influence Our Decisions?
    OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
    MSC: Applying

2. Battery packs that are used in electric vehicles have decreased in price, going from around $1,000 down to $200. As our efficiency in producing these battery packs has increased, driving prices lower, the Jevon paradox would predict an increase in our use of this technology. However, electric vehicles are only around 6% of all vehicle purchases. What other factors might have led to such a slow increase in electric vehicle sales? Do you think purchases of electric vehicles will increase in the future?

   ANS:
   Answers could discuss supply and demand, both for the vehicles themselves and in terms of the impact of low oil prices. As there is little demand for electric vehicles, there has not been an increase in purchases. With low oil prices, there is little reason for people to switch from vehicles with internal combustion engines. If oil prices rise, leading to increased demand for electric vehicles, then sales should increase.

   DIF: Difficult REF: 2.1 How Does Ethics Influence Our Decisions?
   OBJ: 2.A. Define ethics, and describe different ways that people apply its principles.
   MSC: Analyzing | Evaluating

3. In the early 1900s the wild turkey population in the United States had been reduced to less than 30,000 birds. Today, however, there are over 7 million turkeys. Based on your understanding of the tragedy of the commons, what changes could have taken place to lead to this conservation success story?

   ANS:
   Since there were no regulations on hunting or habitat destruction, both factors contributed to the decline of the turkey, as predicted by the tragedy of the commons. When a resource is unregulated, each person takes some until the resource is depleted. When hunting was banned and/or limits were implemented, along with the placement of restrictions on habitat removal, the population increased.

   DIF: Difficult REF: 2.3 How Can Economics Help Us Understand Environmental Problems?
   OBJ: 2.D. Understand how markets often fail to account for all costs and benefits associated with a good or service, leading to environmental harm. MSC: Analyzing

4. One proposed solution to climate change is to implement a cap-and-trade system on carbon dioxide (CO_2). Explain how this system might work and how it would lead to reduced CO_2 emissions.

   ANS:
   The answer should include a description of how cap and trade works, including the fact that emitters of CO_2 (for example, power plants) would have an upper limit on emissions, and those that did not pollute to that level could then sell their credits to other emitters who were over their limit. This would lead to lower emissions due to the fact that profits would increase as you lower CO_2 emissions.

   DIF: Moderate REF: 2.3 How Can Economics Help Us Understand Environmental Problems?
   OBJ: 2.D. Understand how markets often fail to account for all costs and benefits associated with a good or service, leading to environmental harm. MSC: Applying

5. A group of students at your school has decided to start a group focused on understanding how their decisions can influence environmental policy. Discuss at least two different things from Chapter 2 that your group could do to influence policy in your community.

   ANS:
   Answers could include exercising economic power by, for example, examining purchases made by the school to see if more environmentally friendly options would be available. The group could also meet with members of local and state legislatures to discuss the importance of the environment, or it could also discuss the importance of voting for politicians who had environmental priorities that aligned with theirs.

   DIF: Difficult REF: 2.5 What Can I Do?
   OBJ: 2.F. Name some daily decisions you make that are affected by ethics, economics, and policies.
   MSC: Analyzing | Evaluating