***Environment: Science Behind the Stories, 3e* (Withgott et al.)**
Chapter 1 An Introduction to Environmental Science

1.1 Graph and Figure Interpretation Questions

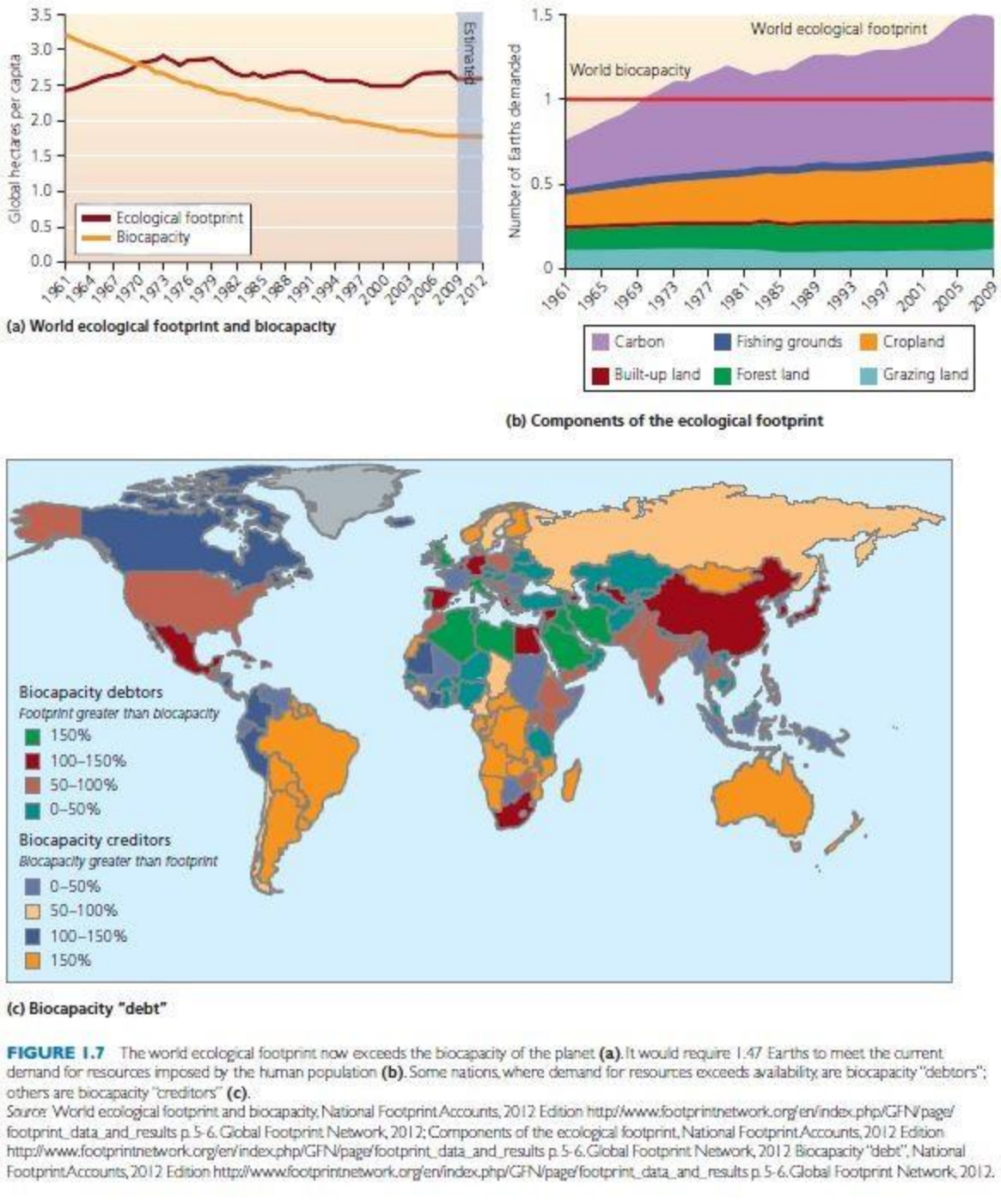

FIGURE 1.7 The world ecological footprint now exceeds the biocapacity of the planet **(a)**. It would require 1.47 Earths to meet the current demand for resources imposed by the human population **(b)**. Some nations, where demand for resources exceeds availability, are biocapacity "debtors"; others are biocapacity "creditors" **(c)**.
Source: World ecological footprint and biocapacity, National Footprint Accounts, 2012 Edition http://www.footprintnetwork.org/en/index.php/GFN/page/footprint_data_and_results p. 5-6. Global Footprint Network, 2012; Components of the ecological footprint, National Footprint Accounts, 2012 Edition http://www.footprintnetwork.org/en/index.php/GFN/page/footprint_data_and_results p. 5-6. Global Footprint Network, 2012 Biocapacity "debt", National Footprint Accounts, 2012 Edition http://www.footprintnetwork.org/en/index.php/GFN/page/footprint_data_and_results p. 5-6. Global Footprint Network, 2012.

Figure 1.1

Use Figure 1.1 to answer the following questions.

1) The component of the ecological footprint that in all years accounts for the greatest amount is _____.

A) built-up land
B) fishing grounds
C) carbon
D) cropland
E) grazing land
Answer: C
Diff: 3 Type: MC
Bloom's Taxonomy: 3 - Applying
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

2) Canada currently has a biocapacity credit of approximately _____.
A) 0-50%
B) 50-100%
C) 100-150%
D) 150%
E) 200%
Answer: C
Diff: 1 Type: MC
Bloom's Taxonomy: 3 - Applying
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

3) The United States and China are the two largest economies in the world and account for what percentage of biocapacity debt each respectively?
A) 50-100% and 100-150%
B) 150% each
C) 50-100% and 150%
D) 50-100% each
Answer: A
Diff: 1 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

1.2 Matching Questions

Match the following.

A) traditional
B) environmentalism
C) goods
D) nonrenewable resources
E) natural resources
F) ecology
G) experimental data
H) natural sciences.
I) sustainable development
J) science
K) environmental studies.
L) ecological sustainability
M) renewable resources
N) interdisciplinary

1) a scientific field of study
Diff: 1 Type: MA
Bloom's Taxonomy: 2 - Understanding
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

2) Environmental science is a(n) _____ field.
Diff: 1 Type: MA
Bloom's Taxonomy: 1 - Remembering
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

3) Tangible material things that can be extracted from the environment are _____.
Diff: 2 Type: MA
Bloom's Taxonomy: 2 - Understanding
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

4) "Meets the needs of the present without sacrificing the ability of future generations to meet their needs" is the definition of _____.
Diff: 2 Type: MA
Bloom's Taxonomy: 1 - Remembering
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

5) Social studies dealing with the environment are part of
Diff: 2 Type: MA
Bloom's Taxonomy: 3 - Applying
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

6) a social movement
Diff: 1 Type: MA
Bloom's Taxonomy: 1 - Remembering
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

7) resources that replenish over short periods of time
Diff: 1 Type: MA
Bloom's Taxonomy: 1 - Remembering
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

Answers: 1) F 2) N 3) C 4) I 5) K 6) B 7) M

1.3 Short Answer Questions

1) Differentiate between renewable and nonrenewable natural resources. Give examples of each.
Answer: Renewable resources are virtually unlimited (e.g., sunlight) or are replenished over short periods of time (e.g., plants). Nonrenewable natural resources are limited in supply and are not replenished or are formed much more slowly than we use them. These would include oil and minerals such as gold, copper, and aluminium. Renewable resources may become nonrenewable if the rate of use outstrips the rate of renewal (e.g., overfishing).
Diff: 1 Type: ES
Bloom's Taxonomy: 4 - Analyzing
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

2) How does the lesson of Rapa Nui apply to the modern world?
Answer: On Rapa Nui, research has provided data supporting the hypothesis that overuse of natural resources led to the collapse of the civilization. Even the cultural move from hunting and gathering to agriculture did not prevent the collapse; it only delayed it. The modern world is much like Easter Island with larger resource pools, and the message remains the same. Civilizations can crumble when population pressure overwhelms resource availability, although for the modern world, this collapse will be a long time in arriving because of advances in such fields as technology, engineering, agriculture, and medicine. This will postpone, but not prevent, eventual societal collapse if the way that resources are used is not changed to be more sustainable.
Diff: 2 Type: ES
Bloom's Taxonomy: 5 - Evaluating
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

3) A town has uncovered an environmental problem that involves the local landfill leaching chemicals into the groundwater that is used by a neighbouring housing development. How will the interdisciplinary nature of environmental science help solve this problem?
Answer: Various disciplines in the natural sciences will help define the problem—such as the chemicals involved, the size of the underground chemical plume, the rate at which it moves, and possible health effects—as well as offer engineering solutions. Social sciences can assist governmental agencies in understanding human behaviour in devising solutions to the problem.
Diff: 2 Type: ES
Bloom's Taxonomy: 5 - Evaluating
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

4) The sum total of our surroundings, affected by living and nonliving things, is called _____.
Answer: the environment
Diff: 1 Type: SA
Bloom's Taxonomy: 1 - Remembering
Objective: 1.1 Define the term *environment*

5) In response to agricultural problems, scientists devised and promoted _____. (Name one solution.)
Answer: soil conservation; high-efficiency irrigation; organic agriculture
Diff: 2 Type: SA
Bloom's Taxonomy: 3 - Applying
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

6) Many people have argued that science is essential if we hope to develop solutions to the problems—environmental and otherwise—that we face today. An additional way that we can go a step further is the _____ of science, to make the science of our world as accessible and understandable to as many people as possible.
Answer: democratization
Diff: 2 Type: SA
Bloom's Taxonomy: 2 - Understanding
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

7) There is often confusion between the terms environmental science and environmentalism. While environmentalism is a social movement dedicated to protecting the natural world, environmental science is _____.
Answer: the pursuit of scientific knowledge about the workings of the environment and our interactions with it.
Diff: 2 Type: ES
Bloom's Taxonomy: 3 - Applying
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

8) When the carrying capacity of the land (or water) system is exceeded—that is, when there are simply too many individuals for the system to support—one of two things will typically happen: _____.
Answer: the population of that species will decline or collapse, or the system itself will be altered, damaged, or depleted.
Diff: 3 Type: ES
Bloom's Taxonomy: 6 - Synthesizing
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

9) Perceptions of what constitutes an environmental problem differs from one person to another and from situation to situation. This variability is largely due to several related factors such as _____.
Answer: a person's age, gender, class, race, nationality, employment, and educational background.
Diff: 2 Type: ES
Bloom's Taxonomy: 3 - Applying
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

10) The environment provides goods and services. Goods are tangible material things that can be extracted from the environment, while services are the functions and processes that are useful or even vital in the support of living organisms. The importance or "value" of these goods and services is flawed because _____.
Answer: it implies that nothing in the world has value unless it is valuable to humans.
Diff: 3 Type: ES
Bloom's Taxonomy: 2 - Understanding
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

11) Garrett Hardin's concept of _____ argues that resources open to unregulated exploitation inevitably become overused.
Answer: the tragedy of the commons
Diff: 2 Type: SA
Bloom's Taxonomy: 1 - Remembering
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

1.4 Multiple-Choice Questions

1) Advances in agriculture _____.
A) did not increase the amount of food per person from a global perspective
B) do not include chemical fertilizers
C) are viewed as one of humanity's greatest failures
D) have resulted in increased death rates
E) have resulted in alteration and destruction of natural systems
Answer: E
Diff: 1 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

2) Ecology is _____.

A) concerned only with solving environmental problems
B) the study of organisms and their interactions with each other and with the environment
C) a subfield of environmentalism
D) not a crucial discipline to environmental science
E) the study of animal behaviour
Answer: B
Diff: 1 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

3) Which of the following is NOT a renewable resource?
A) natural gas
B) sunlight
C) geothermal energy
D) wave energy
E) wind energy
Answer: A
Diff: 1 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

4) The triple bottom line includes which of the following goals?
A) environmental goals, economic goals, social goals
B) environmental goals, development goals, social goals
C) global goals, economic goals, social goals
D) national goals, economic goals, development goals
E) environmental goals, economic goals, national goals
Answer: A
Diff: 1 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

5) Ecological footprint is essential the inverse of _____.
A) carrying capacity
B) sustainable development
C) biocapacity
D) tragedy of the commons
E) renewable resources
Answer: A
Diff: 1 Type: MC
Bloom's Taxonomy: 6 - Synthesizing
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

6) Our environment includes _____.
A) all biotic and abiotic components
B) only the earth's water sources
C) only the earthy continents
D) all non-living components
E) only the earth's terrestrial sources
Answer: A
Diff: 1 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.1 Define the term *environment*

7) Science is _____.
A) a systematic process for learning about the world
B) the study of how the natural world works
C) a social movement dedicated to protecting the natural world
D) strategic decision-making and planning aimed at balancing the use of resources
E) a tool to express environmental impacts
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

8) The situation in which each individual withdraws whatever benefits are available from the common property as quickly as possible until the resource becomes overused and depleted is called _____.
A) the tragedy of the commons
B) sustainable development
C) the carrying capacity
D) one of humanity's greatest failures
E) good resource management
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

9) Carrying capacity is _____.
A) a measure of the ability of a system to support life
B) a social movement dedicated to protecting the natural world
C) strategic decision-making and planning aimed at balancing the use of resources
D) a systematic process for learning about the world.
E) the study of how the natural world works
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

10) The cumulative number and diversity of living things defines _____.

A) biodiversity
B) biology
C) carrying capacity
D) ecological footprint
E) sustainable development
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

11) According to Edward O. Wilson, biodiversity _____.
A) cannot be conserved
B) is a nonrenewable resource
C) can recover quickly
D) can recover quickly with human intervention
E) is a resource that can be used endlessly for human benefit
Answer: B
Diff: 3 Type: MC
Bloom's Taxonomy: 3 - Applying
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

12) In general, natural resources _____.
A) should not be used
B) should be conserved
C) belong only to those on whose property they exist
D) are evenly divided among all countries
E) should be used by everyone equally
Answer: B
Diff: 1 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

13) Solutions to environmental problems _____.
A) can be implemented only by scientists
B) must be sustainable
C) must be on a local scale
D) must be left to industry
E) are best discussed in the political arena
Answer: B
Diff: 1 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

14) Rocks, wind, water, temperature and solar radiation are all examples of _____.
A) non-renewable resources
B) abiotic environmental factors
C) biotic environmental factors
D) renewable resources
E) biodegradable materials
Answer: B
Diff: 2 Type: MC
Bloom's Taxonomy: 3 - Applying
Objective: 1.1 Define the term *environment*

15) "T" in the IPAT formula stands for _____.
A) technology
B) time
C) transition
D) transpiration
E) telecommuting
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

16) "A" in the IPAT formula stands for _____.
A) affluence
B) anthropogenic
C) abiotic
D) agriculture
E) anticipatory
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

17) According to Edward O. Wilson, the most serious and threatening environmental problem is _____.
A) the introduction of invasive species
B) loss of biodiversity
C) loss of arable land to expanding cities
D) extensive use of pesticides and fertilizers
E) acid rain
Answer: B
Diff: 3 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

18) The cumulative number and types of living things on Earth is _____.
A) called taxonomy

B) its biodiversity
C) increasing rapidly
D) its environment
E) an abiotic factor
Answer: B
Diff: 2 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

19) You have read about the mistakes made on Rapa Nui. On Tikopia, another small island, the people acted in other ways. When they realized that the pigs they had imported were damaging the environment, they killed them all. They had to have permission from a chief to fish, which prevented overfishing. They practised contraception. These all indicate that _____.
A) they believed in full resource utilization
B) they should not eat meat
C) they felt that everything was a renewable resource
D) they applied technological innovations to increase their resources
E) they practised sustainability
Answer: E
Diff: 3 Type: MC
Bloom's Taxonomy: 5 - Evaluating
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

20) Carbon dioxide from fossil fuels, in addition to warming the atmosphere, is also a primary cause of _____.
A) toxic air pollution in the Arctic
B) deforestation
C) acidification of ocean water
D) an increase in the UV-radiation (ozone hole)
E) soil degradation
Answer: C
Diff: 2 Type: MC
Bloom's Taxonomy: 4 - Analyzing
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

21) Sustainable development _____.
A) ensures an economy that will decline over time
B) means consuming resources without compromising future availability
C) is impossible to accomplish
D) is beyond our current technology and attitudes
E) is possible given our increased use of fertilizers and technology for agriculture
Answer: B
Diff: 1 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

22) _____ can be quantified as the number of individuals of a given species that can be sustained by the biological productivity in a given area.
A) Carrying capacity

B) Biodiversity index
C) Population size
D) Community structure
E) Distribution density
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

23) The capacity of a terrestrial or aquatic ecosystem to be biologically productive and to absorb waste (like carbon dioxide) is called _____.
A) biocapacity
B) carrying capacity
C) bioavailability
D) carrying productivity
E) biomic capacity
Answer: A
Diff: 3 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

24) Ecological footprint is NOT a(n) _____.
A) number used to prove the concept of tragedy of the commons
B) total area that is "used" by a given person (including direct and indirect impacts)
C) measure of environmental impact of an individual
D) area of land and water required to provide raw materials that a person consumes
E) inverse of carrying capacity
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

25) The environment includes the complex web of _____.
A) scientific, ethical, political, economic, and social relationships and institutions
B) government, political and social relationships
C) scientific, ethical, political, economic, and social institutions
D) biotic components
E) abiotic components
Answer: A
Diff: 1 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.1 Define the term *environment*

26) Environmental science is an _____ field of study.
A) interdisciplinary
B) practical
C) introductory
D) traditional
E) pragmatic
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 2 - Understanding
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

27) Environmental science encompasses the natural sciences and the _____.
A) social sciences
B) life sciences
C) arts
D) geologic sciences
E) interdisciplinary sciences
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

28) British scientist John Flenley and colleagues drilled cores deep into lake sediments on Rapa Nui and discovered that the island was once _____.
A) lushly forested
B) under water
C) volcanic ash
D) desert
E) barren
Answer: A
Diff: 2 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

1.5 True/False Questions

1) Environmentalism is a scientific approach to understanding environmental problems.
Answer: FALSE
Diff: 1 Type: TF
Bloom's Taxonomy: 3 - Applying
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

2) Scientists believe that fossil fuel use is contributing to warming of the lower atmosphere.
Answer: TRUE
Diff: 1 Type: TF
Bloom's Taxonomy: 1 - Remembering
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

3) Globalization will have an impact on the development of environmental law as the global community is interconnected by trade, politics, and the movement of people and species.
Answer: TRUE
Diff: 1 Type: TF
Bloom's Taxonomy: 5 - Evaluating
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

4) Over half of Earth's surface is used for some kind of agriculture.
Answer: TRUE
Diff: 2 Type: TF
Bloom's Taxonomy: 1 - Remembering
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

5) People who maintain that human ingenuity will find ways to make Earth's resources meet our needs indefinitely are called "Cassandras."
Answer: FALSE
Diff: 1 Type: TF
Bloom's Taxonomy: 1 - Remembering
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

6) If the ecological footprint of a population increases, the system is not at risk of permanent damage.
Answer: FALSE
Diff: 2 Type: TF
Bloom's Taxonomy: 2 - Understanding
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

7) The results of the Millennium Ecosystem Assessment illustrate that we are not degrading the world's environmental systems.
Answer: FALSE
Diff: 1 Type: TF
Bloom's Taxonomy: 6 - Synthesizing
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

1.6 Essay Questions

1) Why is it important to understand our interactions with the environment? What will studying environmental science enable you to do?
Answer: We depend on the environment for air, water, food, shelter, and everything else. We are capable of modifying the environment whether we intend to or not, which in turn affects the functioning of human civilization and our quality of life. Understanding our interactions with the environment is the essential first step toward devising positive, sustainable solutions. Studying environmental science will give students the tools that can help them evaluate information on environmental change and its causes, and to think critically and creatively about possible actions to take in response.
Diff: 1 Type: ES
Bloom's Taxonomy: 5 - Evaluating
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

2) Give an example of an *environmental problem.* Why does the perception of what is an environmental problem differ from time to time and country to country? Give an example of how the perception of an environmental problem may have changed.
Answer: Examples of an environmental problem could be acid drainage from an abandoned mine or the use of DDT. Whether something is an environmental problem depends on whether we are aware of the environmental consequences of our actions and whether we perceive the consequences as undesirable. Both the awareness and the perceptions can differ from time to time and country to country. For example, during the first decades of use of DDT, nobody was aware of its biological consequences. Today, knowing these consequences, people in developed countries are likely to perceive the use of DDT as an environmental problem. But at the same time, people in other parts of the world that are severely affected by malaria either may not know about the environmental impacts of DDT or may consider the risks acceptable in comparison to the risks of malaria. Still, we should accept the challenge of trying to control malaria-transmitting mosquitoes without major threat to the environment.
Diff: 2 Type: ES
Bloom's Taxonomy: 5 - Evaluating
Objective: 1.1 Define the term *environment*

3) Differentiate between environmental science and environmentalism. Define each term and explain how they are similar and how they differ.
Answer: Environmental science is the pursuit of knowledge about the workings of the environment and our interactions with it. Environmentalism is a social movement to protect the natural environment and, by extension, humans, from undesirable changes brought about by certain human choices. Environmental scientists and environmentalists study the same issues, but environmental scientists use an objective scientific approach to understanding environmental problems. Environmentalists, on the other hand, use dramatic and often emotional approaches to highlight findings of environmental science, and in doing so, alter the political and social perception and understanding of environmental problems.
Diff: 1 Type: ES
Bloom's Taxonomy: 4 - Analyzing
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

4) What four transformative events of the past 2.5 million years caused human population size to increase? Describe each event, briefly explaining the contributions that each made to human population growth. Include the pros and cons of each.
Answer: The paleolithic revolution involved gaining the control of fire and use of stone tools. The neolithic revolution included transition from the hunter-gatherer lifestyle to an agricultural lifestyle. During the industrial revolution, there were shifts from rural life, animal-powered agriculture, and manufacture by craftspeople to an urban society powered by fossil fuels such as coal and oil. The medical-technological revolution created advances in medicine, sanitation, communication technologies, and agricultural practices (Green Revolution). Each revolution, by increasing the amount of available food and by providing new and more effective ways to extract resources from the environment, allowed the human population to increase. *Students should describe the benefits and problems associated with each revolution.*
Diff: 1 Type: ES
Bloom's Taxonomy: 5 - Evaluating
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

5) Compare and contrast the types of knowledge gained and the research methods of the natural and social sciences when considering environmental problems. Why do both disciplines need to be a part of environmental science?
Answer: The natural sciences are made up of disciplines that study the biotic and abiotic facets of the natural world and their interactions with each other. These disciplines rely on all types of studies that generate mainly quantitative data, allowing scientists to acquire and interpret information about the natural world. The social sciences are made up of disciplines that study human attitudes, behaviours, and interactions. The scientists in these disciplines mainly collect qualitative data by using a variety of research techniques that are similar to natural scientists. Studies that examine how cultures perceive an environmental concept may be used to implement environmental policy. To address complex environmental problems, we need to understand both their natural and social causes and implications.
Diff: 2 Type: ES
Bloom's Taxonomy: 5 - Evaluating
Objective: 1.2 Characterize the interdisciplinary nature of environmental science

6) We are unable to live without impacting any impact on the Earth's systems. How do we solve environmental problems?

Answer: We face many trade-offs; the challenge is to develop solutions that increase the quality of life for people everywhere in the world while minimizing harm to the environment that supports us.
Diff: 2 Type: ES
Bloom's Taxonomy: 2 - Understanding
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

7) How does globalization affect virtually all environmental issues?
Answer: Globalizations means increased global interconnectedness in trade, politics, and the movement of people and other species. However, it also sets the stage for novel and effective solutions on a global scale. Many workable solutions are at hand, and we can achieve many more solutions with further effort.
Diff: 3 Type: ES
Bloom's Taxonomy: 3 - Applying
Objective: 1.4 Diagnose and illustrate some of the pressures on the global environment

8) A group of scientists identified nine key systems that are crucially important to the Earth system. What are they and why were they chosen?
Answer: The nine key systems are stratospheric ozone layer, biodiversity, toxic chemicals dispersion, climate change, ocean acidification, freshwater consumption and the global hydrological cycle, land system change, nitrogen and phosphorus inputs to the biosphere and oceans, and atmospheric aerosol loading. These were chosen because of their core importance in maintaining Earth and its life-supporting functions, for their global influence, and for the potential for their rapid or irreversible change.
Diff: 3 Type: ES
Bloom's Taxonomy: 6 - Synthesizing
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

9) What is a sustainable enterprise? What are its features with regard to materials and energy, waste, ecological footprint, and a "triple bottom line"?
Answer: A sustainable enterprise is one that allows future generations to carry it on at the same level of productivity that we do at present. Whatever natural capital is required will remain equally available in the future as it is now. The environmental effects of the enterprise will not damage, degrade, or deplete the systems with which it interfaces. Materials and energy will be used efficiently, wastes will be minimal and non-toxic, and the ecological footprint of the enterprise will remain unchanged or may diminish as better technology becomes available. A sustainable enterprise would meet the triple bottom line by meeting environmental, social, and economic goals.
Diff: 2 Type: ES
Bloom's Taxonomy: 4 - Analyzing
Objective: 1.5 Articulate the concepts of sustainability and sustainable development

1.7 Scenario-Based Questions

Read the following scenario and answer the questions below.

A group of students has been assigned a project for a university geography course. The project is designed to help the students realize the relationship between renewable and nonrenewable resources. The project provides a list of available resources: sunlight, wind energy, wave energy, crude oil, natural gas, copper, and coal. Students must categorize these resources as renewable or nonrenewable and be able to understand how human population has affected each of the resources listed above.

1) An example of a renewable resource is _____.
A) natural gas
B) coal
C) sunlight
D) copper
E) crude oil
Answer: C
Diff: 1 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

2) An example of a non-renewable resource is _____.
A) sunlight
B) wind energy
C) wave energy
D) crude oil
Answer: D
Diff: 3 Type: MC
Bloom's Taxonomy: 3 - Applying
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

3) _____ is strategic decision-making and planning aimed at balancing the use of a resource with its protection and preservation.
A) Resource management
B) Natural resources
C) Non-renewable resources
D) Renewable resources
Answer: A
Diff: 3 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.3 Describe several types of natural resources and explain their importance to human life

4) Too often, because no single person owns a resource, no one has any incentive to limit the exploitation of that particular resource. This is known as _____.
A) tragedy of the commons
B) resource exploitation
C) carrying capacity
D) resource management
Answer: A
Diff: 3 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.1 Define the term *environment*

5) Population growth is often cited as the cause for many environmental problems. However, patterns and habits of resource consumption and the impacts of new technologies are also responsible for environmental impacts. Related to the resources listed in the scenario, the industrial revolution resulted in increased use of _____.
A) coal
B) wind energy
C) sunlight
D) wave energy
Answer: A
Diff: 3 Type: MC
Bloom's Taxonomy: 1 - Remembering
Objective: 1.2 Characterize the interdisciplinary nature of environmental science