

Environment and Humanity

Chapter 3

The following chart outlines the sections and subsections in the Environment and Humanity test and offers a comparison between the percent of practice questions in this chapter and the actual DSST exam.

CONTENT OUTLINE: SECTIONS AND SUBSECTIONS	PERCENT OF EXAM DEVOTED TO EACH CONTENT AREA	NUMBER OF ITEMS IN THE DIAGNOSTIC TEST AND POST-TEST BY CONTENT AREA	PERCENT OF ITEMS IN THE DIAGNOSTIC TEST AND POST-TEST BY CONTENT AREA
I. Ecological Concepts	30%	27	33.75%
A. Ecosystems/Terrestrial & Aquatic		4	14.9%
B. Global Ecology		1	3.7%
C. Atmospheric Structure		1	3.7%
D. Roles of Organisms		2	7.4%
E. Biodiversity & Stability		1	3.7%
F. Energy Flow		1	3.7%
G. Trophic Levels		2	7.4%
H. Food Chains & Webs		1	3.7%
I. Biogeochemical Cycling		2	7.4%
J. Biomes & Productivity		3	11.1%
K. Population Biology		3	11.1%
L. Evolution		3	11.1%
M. Succession		3	11.1%
II. Environmental Impacts	30%	21	26.25%
A. Human Population Growth		2	9.6%
B. Global Climate & Weather		1	4.7%
C. Greenhouse Effect		2	9.6%
D. Ozone Layer		1	4.7%
E. Pollution		8	38.3%
F. Environmental Risk Assessment		1	4.7%
G. Industrial & Agricultural Revolution		2	9.6%
H. Industrial Development in Emerging Nations		1	4.7%
I. Deforestation		1	4.7%
J. Desertification		1	4.7%
K. Eutrophication		1	4.7%
III. Environmental Management & Conservation	30%	24	30%
A. Renewable & Nonrenewable Resources		7	29.1%
B. The Green Revolution		1	4.2%

C. Agricultural Practices		4	16.6%
D. Pesticides & Pest Control		1	4.2%
E. Soil Conservation and Land Use		2	8.3%
F. Air Pollution Control		1	4.2%
G. Drinking Water Quality & Supply		1	4.2%
H. Wastewater Treatment		1	4.2%
I. Solid & Hazardous Waste		2	8.3%
J. Recycling/Resource Recovery		3	12.5%
K. Industrial Ecology		1	4.2%
IV. Political Processes & the Future	10%	8	10%
A. Environmental Laws, Policies, and Ethics		5	62.5%
B. Planning & Decision Making		0	0%
C. International Policy		1	12.5%
D. Differing Cultural/Societal Values		1	12.5%
E. Future Issues		1	12.5%
Grand Total	100%	80	100%

OVERVIEW

- Diagnostic test
- Answer key and explanations
- Ecological concepts
- Environmental impacts
- Environmental management and conservation
- Political processes and the future
- Post-test
- Answer key and explanations
- Summing it up

DIAGNOSTIC TEST

Directions: Carefully read each of the following 20 questions. Choose the best answer to each question and circle your answer choice. The Answer Key and Explanations can be found following this Diagnostic Test.

1. In a temperate deciduous forest, maple trees, birds, and squirrels all live in the same given area. All three species together make up a/an
(A) ecosystem.
(B) community.
(C) population.
(D) niche.
2. Which process is a method used only in making ocean water suitable for drinking?
(A) Disinfecting
(B) Desalination
(C) Filtering
(D) Cleansing
3. Which of the following is the best definition of a population?
(A) A group of interacting organisms
(B) Organisms that produce offspring
(C) A group of the same species living in the same location
(D) A group of organisms in an ecosystem
4. Pollution can be reduced by using renewable energy sources such as
(A) gas and electricity.
(B) power and energy.
(C) coal and oil.
(D) solar energy and wind power.
5. Which of the following terms describes how water is taken up into the atmosphere from a lake?
(A) Transpiration
(B) Evaporation
(C) Condensation
(D) Precipitation
6. What is it called when two individuals of the same species have different physical characteristics, and one is able to live long enough to reproduce and the other is not?
(A) Macroevolution
(B) Adaptation
(C) Natural selection
(D) Coevolution

7. Which of the following occupies the first trophic level?
- (A) Consumers
 - (B) Carnivores
 - (C) Herbivores
 - (D) Producers
8. Industrial waste containing dioxins would be considered
- (A) medical waste.
 - (B) hazardous waste.
 - (C) recyclable waste.
 - (D) solid waste.
9. The excessive growth of algae in a freshwater ecosystem is called
- (A) water pollution.
 - (B) algalification.
 - (C) eutrophication.
 - (D) deforestation.
10. Which of the following is an example of a species found in a pioneer community?
- (A) Lichen
 - (B) Wildflowers
 - (C) Fungi
 - (D) Bacteria
11. The development of agriculture began with the concept of
- (A) gathering.
 - (B) increasing food volume.
 - (C) manipulating plants and soil.
 - (D) clearing large plots of land.
12. In 1898, a Swedish scientist predicted that carbon dioxide emissions from excessive burning of fossil fuels could lead to
- (A) the greenhouse effect.
 - (B) the industrial revolution.
 - (C) air pollution.
 - (D) global warming.
13. Which type of mining is used if the overburden material is deep?
- (A) Subsurface mining
 - (B) Strip mining
 - (C) Hydraulic mining
 - (D) Coal mining
14. Which process removes large particles from wastewater?
- (A) Primary sewage treatment
 - (B) Secondary sewage treatment
 - (C) Tertiary sewage treatment
 - (D) Quaternary sewage treatment
15. The first phase of population growth is often called the
- (A) exponential phase.
 - (B) equilibrium phase.
 - (C) deceleration phase.
 - (D) lag phase.
16. Which of the following alternative energy sources does NOT raise environmental issues?
- (A) Hydroelectric power
 - (B) Solar power
 - (C) Wind power
 - (D) Geothermal power
17. In the hope of creating a better environmental future, the efficiency revolution aims to
- (A) reduce air pollution.
 - (B) protect all species.
 - (C) minimize waste of matter and energy.
 - (D) help people learn to live with less.
18. Which of the following is a type of volatile organic compound?
- (A) Lead
 - (B) Sulfur dioxide
 - (C) Hydrocarbons
 - (D) Particulate matter

19. The concept of basing industrial production methods on biological models is called
 (A) Industrial Revolution.
 (B) industrial ecology.
 (C) biological revolution.
 (D) ecological diversity.
20. In 1970, Congress established
 (A) Earth Day.
 (B) the World Health Organization.
 (C) the Environmental Protection Agency.
 (D) Agenda 21.

ANSWER KEY AND EXPLANATIONS

1. B	5. B	9. C	13. A	17. C
2. B	6. C	10. A	14. A	18. C
3. C	7. D	11. C	15. D	19. B
4. D	8. B	12. D	16. B	20. C

1. **The correct answer is (B).** All the different populations living in a certain place make up a community. Choice (A) is incorrect because an ecosystem includes all living and nonliving things in an environment. Choice (C) is incorrect because each of the three species is a separate population. Different species cannot be part of the same population. Choice (D) is incorrect because the role of each organism in a community is its niche.
2. **The correct answer is (B).** The process of desalination is necessary to remove the salts from ocean water so that it can be used as a source of drinking water. Choice (A) is incorrect because all water sources are disinfected with chlorine, UV light, or ozone. Choice (C) is incorrect because filtering is a process that is performed on all drinking water supplies. Choice (D) is incorrect because all water is cleansed before it is safe for drinking.
3. **The correct answer is (C).** A population is defined as a group of the same species living in the same geographical location at the same time. Choice (A) is incorrect because a group of interacting organisms of different types is referred to as a community. Choice (B) is incorrect because a group of organisms that reproduces is a species. Choice (D) is incorrect because a group of organisms in an ecosystem is a community.
4. **The correct answer is (D).** Both solar and water are renewable natural resources. Choice (A) is incorrect because gas is a product of oil, a nonrenewable resource, and electricity can be generated from both renewable and nonrenewable resources. Choice (B) is incorrect because power and energy are not sources of energy. Choice (C) is incorrect because oil and coal are both fossil fuels and are nonrenewable resources.
5. **The correct answer is (B).** Evaporation occurs in bodies of water as water on the surface is changed into water vapor, a gas, and released into the atmosphere. Choice (A) is incorrect because transpiration is the process by which plants lose water through the stomata in their leaves. This results in the release of water into the atmosphere, but through plants, not a body of water. Choice (C) is incorrect because condensation is the change from of a gas to a liquid, and it involves water already in the atmosphere. Choice (D) is incorrect because precipitation comes from water already in the atmosphere that falls to the earth.

6. **The correct answer is (C).** Natural selection, also referred to as survival of the fittest, occurs when one member of a species is able to survive and reproduce and another dies before reproducing. Choice (A) is incorrect because macroevolution refers to large-scale evolutionary changes over a long period of time. Choice (B) is incorrect because adaptations are changes in an organism or species that don't affect their ability to survive and reproduce. Choice (D) is incorrect because coevolution is when two or more species interact and exert selective pressure on one another, which can lead to adaptations and evolutionary changes in both species.
7. **The correct answer is (D).** Producers occupy the first trophic level and obtain energy from the sun. This energy is converted and some of it is passed on to other species at higher trophic levels. Choice (A) is incorrect because consumers occupy the second trophic level and above. Choice (B) is incorrect because carnivores occupy either the third or fourth trophic level. Choice (C) is incorrect because herbivores occupy the second trophic level.
8. **The correct answer is (B).** Dioxins are toxic chemicals, and industrial waste containing dioxins is considered to be hazardous waste. Choice (A) is incorrect because dioxins are environmental pollutants and are not considered medical waste or biohazardous material. Choice (C) is incorrect because dioxins are not a recyclable material. Choice (D) is incorrect because dioxins are an organic chemical compound and are considered hazardous waste, not solid waste.
9. **The correct answer is (C).** The excessive growth of algae and aquatic plants due to added nutrients in the water is called eutrophication. Choice (A) is incorrect because although nutrients can cause water pollution, the excessive growth of algae caused by added nutrients is more specifically called eutrophication. Choice (B) is incorrect because algalification is not a term used by environmental scientists. The proper term for excessive algae growth is eutrophication. Choice (D) is incorrect because deforestation refers to activities that destroy forest environments, and does not refer to algae growth.
10. **The correct answer is (A).** Lichens are a type of pioneer organism that establish themselves on rocks and contribute to the formation of a thin layer of soil, so other organisms can grow. Choice (B) is incorrect because wildflowers need soil to establish and grow. Choice (C) is incorrect because fungi need to grow on organic material. Choice (D) is incorrect because bacteria are introduced at later stages of succession.
11. **The correct answer is (C).** The origin of agricultural practices began with the concept of manipulating plants and soil to grow desired crops. Choice (A) is incorrect because hunting and gathering of food came before the advent of agricultural practices. Choice (B) is incorrect because increasing food volume was a result of the agricultural revolution, not the beginning of it. Choice (D) is incorrect because clearing large plots of land and manipulating plants and soil were concepts that came after the advent of agriculture.
12. **The correct answer is (D).** During the rise of the Industrial Revolution, Svante August Arrhenius warned that an increase in carbon dioxide could lead to an increase in Earth's temperatures, an effect that we refer to as global warming. Choices (A), (B), and (C) are incorrect because these aren't what Arrhenius warned against.
13. **The correct answer is (A).** Subsurface, or underground, mining is the process of obtaining coal far beneath Earth's surface. A thick overburden means that the coal is buried deep underground. Choice (B) is incorrect because strip mining, or surface mining, involves removing the material on top of the vein of coal to get to the coal. Choice (C) is incorrect because hydraulic mining involves spraying hillsides with high-pressure water jets to dislodge coal

or desired minerals. Choice (D) is incorrect because subsurface mining is a type of coal mining, but there are many different methods of coal mining.

- 14. The correct answer is (A).** The removal of large particles from sewage (wastewater) by a process of filtering the water through screens takes place during primary sewage treatment. Choice (B) is incorrect because secondary sewage treatment involves the dissolving away of organic materials with microorganisms. Choice (C) is incorrect because tertiary sewage treatment involves the removal of inorganic nutrients such as nitrogen and phosphorus. Choice (D) is incorrect because there are only three sewage treatment steps, not four.
- 15. The correct answer is (D).** The first part of a population growth curve is often referred to as the lag phase because populations grow very slowly at first; the process of reproduction takes some time to get started. Choice (A) is incorrect because the exponential growth phase is the time of a high growth rate of a population. This usually follows the initial lag phase. Choice (B) is incorrect because the equilibrium phase occurs when a population is relatively stable, after the exponential growth phase. Choice (C) is incorrect because the deceleration phase is when the birth and death rates become equal and the population stops growing.
- 16. The correct answer is (B).** Solar energy is energy harnessed from the sun and raises no concerns for the environment. Choice (A) is incorrect because the construction of dams and reservoirs necessary to obtain hydroelectric power causes environmental problems in regions downstream of the dam or reservoir. Choice (C) is incorrect because wind generators can harm birds and create annoying noises. Choice (D) is incorrect because geothermal power creates air pollution because of the hydrogen sulfide that is released into the atmosphere.
- 17. The correct answer is (C).** As part of the sustainability revolution that aims to promote a more positive environmental future, the efficiency revolution seeks to minimize the wasting of matter and energy resources. Choice (A) is incorrect because the reduction of air pollution is an aim of the pollution prevention revolution. Choice (B) is incorrect because the biodiversity protection revolution is devoted to protecting all life. Choice (D) is incorrect because the sustainability revolution aims to help more affluent countries learn to live more sustainably with less.
- 18. The correct answer is (C).** Volatile organic compounds are mostly composed of hydrogen and carbon atoms, and they are, therefore, called hydrocarbons. Choice (A) is incorrect because lead is not an organic compound. Choice (B) is incorrect because sulfur dioxide is not considered a hydrocarbon. Choice (D) is incorrect because particulate matter is a solid form of air pollution, not a volatile gaseous form.
- 19. The correct answer is (B).** During the mid-1990s, a concept called industrial ecology emerged. Industrial ecology models methods of industrial production on biological production. Choice (A) is incorrect because the Industrial Revolution marks the advent of the use of coal as a fuel source to power machinery used in the production of goods. Choice (C) is incorrect because there is no such thing as the biological revolution. Choice (D) is incorrect because ecological diversity concerns living organisms and ecosystems, not industrial production.
- 20. The correct answer is (C).** The Environmental Protection Agency (EPA) was established by the U.S. Congress in 1970. Choice (A) is incorrect because although the first Earth Day was held in 1970, it is not a government-sponsored organization. Choice (B) is incorrect because the World Health Organization (WHO) is an international organization that was established by the United Nations. Choice (D) is incorrect because Agenda 21 is a statement of principles for the management of global environmental issues.