

Living with Earth: An Introduction to Environmental Geology (Hudson)

Chapter 1 What Does Living with the Earth Mean?

1) Which of the following is part of environmental geology?

- A) interactions between people and the Earth
- B) understanding natural process that shape the earth, like earthquakes, landslides and floods
- C) how people use the Earth for resources like minerals and fuel
- D) how we can become better stewards of the Earth and its natural resources
- E) all of the above

Answer: E

2) What is a sustainable society?

- A) one that can satisfy its needs without jeopardizing the needs of future generations
- B) one in which population stability occurs by increased fatalities, mass starvation, and ecologic degradation
- C) one that grows exponentially
- D) one that consumes geosphere resources
- E) all of the above.

Answer: A

3) What is the formula for population growth rate?

- A) = birth rate * death rate
- B) = birth rate + death rate
- C) = birth rate — death rate
- D) = death rate/birth rate
- E) = birth rate + 70

Answer: C

4) If we consume more mineral resources than we produce, we will have to:

- A) recycle more.
- B) create alternatives for the mineral resource.
- C) exploit lower grade resources.
- D) import more.
- E) all of the above.

Answer: E

5) How would a sustainable society respond to overpopulation demands?

- A) would engage in agricultural practices that preserve soil quality for future generations
- B) would seek alternatives to burning Earth's reserves of limited fossil fuels
- C) would limit deforestation
- D) would invest more efforts in recycling
- E) all of the above

Answer: E

6) Which country has an essentially stable population?

- A) India
- B) Nigeria
- C) Japan
- D) Pakistan
- E) Afghanistan

Answer: C

7) What is per capita consumption?

- A) average amount items are recycled rate per year per person
- B) average consumption of a commodity per year per person
- C) how much a person works per year per person
- D) how long it takes for a country's population to double
- E) how much waste is generated by a person per year

Answer: B

8) Which of the following is NOT a component of the hydrosphere?

- A) sun
- B) rivers
- C) clouds
- D) glaciers
- E) oceans

Answer: A

9) What is a sink?

- A) A system where matter and energy can move in and out.
- B) The rate of transfer of matter among difference systems.
- C) The average amount of time matter is contained in a reservoir.
- D) Where matter can be trapped if it has a long residence time.
- E) A system that consists of all of the living organisms that inhabit the Earth.

Answer: D

10) If transfers of energy and matter into and out of an open system are about the same, the system is said to be:

- A) in steady state.
- B) in a sink.
- C) in a reservoir.
- D) in the geosphere.
- E) in a system.

Answer: A

11) Which of the following is part of the biosphere?

- A) gases that surround the Earth
- B) the rock (solid and molten) and materials derived from rock that make up the Earth
- C) all the water (liquid and frozen) on the Earth's surface and underground
- D) all living organisms on the Earth
- E) all of the above

Answer: D

12) Carbon is stored in reservoirs in each of the four Earth systems.

Answer: TRUE

13) A given reservoir will stay the same size if the flux in is greater than the flux out.

Answer: FALSE

14) Which of the following is an example of flux?

A) how long water stays in the atmosphere

B) a lightbulb

C) transfer of carbon from the atmosphere into land plants

D) a group of independent parts that together form a system

E) an approach to asking and answering scientific questions

Answer: C

15) The amount of time matter is contained in a specific reservoir is called _____ time.

A) flux

B) sink

C) open

D) reservoir

E) residence

Answer: E

Match the following components to the regions within the Earth system.

A) An approach to asking and answering questions that scientist use to explore and explain how the natural world operates.

B) A tentative explanation that is the consistent with what is known about a situation; needs to be tested.

C) A well educated guess about what will happen based on observations and statements about a situation or problem.

D) A well-accepted statement that many consider a useful explanation of a situation or problem.

16) Theory

17) Hypothesis

18) Scientific method

19) Prediction

Answers: 16) D 17) B 18) A 19) C

20) Which of the following is an example of a renewable energy resource?

- A) coal
- B) oil
- C) solar
- D) gas
- E) All are renewable.

Answer: C

21) What is true about a scientific theory?

- A) it can never be disproved with further evidence
- B) is a tentative explanation consistent with what researchers know about a situation
- C) is a set of questions about a subject
- D) it explains a large set of observations and relationships that have been independently verified by many researchers
- E) it rarely explains scientific phenomena

Answer: D

22) How is biodiversity measured?

- A) by counting the number of people that the Earth can support
- B) by measuring the number of species
- C) by destroying, fragmenting, and degrading habitats
- D) by measuring the total market value of goods and services produced in a year
- E) by analyzing the types of rocks (solid and molten) that make up the Earth

Answer: B

23) Which of the following explains how the geosphere interacts with the atmosphere?

- A) The sun transfers energy to the oceans and causes severe weather, like hurricanes.
- B) A plant uses carbon dioxide to produce leaves.
- C) A volcano explodes gases and ash into the air.
- D) A glacier melts into the ocean.
- E) A plant dies on the ocean floor.

Answer: C

Match the following components to the regions within the Earth system.

- A) algae
- B) carbon dioxide
- C) melting glacier
- D) lava from a volcano

24) Hydrosphere

25) Atmosphere

26) Geosphere

27) Biosphere

Answers: 24) C 25) B 26) D 27) A

28) As human population increases, so will generation of waste, increase use of resources, and pollution.

Answer: TRUE

29) As human population increases, so does the cost of natural disasters.

Answer: TRUE

30) Solar energy and hydroelectric power are examples of non-renewable energy resources.

Answer: FALSE

31) Which of the following are components of the scientific method?

A) raising questions

B) creating hypotheses

C) making predictions

D) acquiring data and evaluating results

E) all of the above

Answer: E

32) A sink for water on the planet could include:

A) atmosphere.

B) streams and rivers.

C) underground.

D) in the ocean.

E) all of the above.

Answer: E

33) Closed systems:

A) allow matter and energy to move in and out.

B) allow matter only to move in and out.

C) allow energy only to move in and out.

D) allow nothing in or out.

E) all of the above

Answer: C

34) An example of a closed system is:

A) a lake fed by a river.

B) an erupting volcano.

C) a lightbulb.

D) the human body.

E) none of the above.

Answer: C

35) Of concern to the environmental geologist is:

- A) landslides.
- B) earthquakes and faults.
- C) mineral resources.
- D) hydrology.
- E) all of the above.

Answer: E

36) Describe the scientific method. How do geologists use the method to understand the Earth?

37) What is the world's present population to the nearest billion? How do recent population growth rates compare with earlier times?

38) What regions of the world have the fastest rates of population growth? What regions of the world have the slowest rates of population growth? How do these countries differ?

39) True or False? Every country is currently experiencing an increase in population. Explain your answer.

40) Find someone who has lived in both a large city and a smaller town. Ask them what the differences are in terms of their quality of living. Do they prefer to live in a larger city or a smaller town? What are positive and negative aspects of living in both types of places?

41) What is the Earth's carrying capacity? How do you think this could be measured?