Chapter 1 Test Bank

Completion

1. The geosphere consists of three major layers: the _____, _____, and _____.
2. The _____ is the zone inhabited by life.
3. Oceans cover the planet and contain about _____ percent of its water.
4. The _____ contains all of Earth's water.
5. The _____ is a mixture of gases, mostly nitrogen and oxygen.
6. During the formation of planets, gravitational forces caused small rocky spheres to collide and coalesce to form mini-planets called _____.
7. The _____ of the Earth is a thin, rigid surface veneer that lies above the mantle.
8. The Earth's outer, cool, rigid shell is broken into several segments called _____ _____.
9. The central portion of the Earth, called the _____, contains a solid layer surrounded by a molten layer.
10. At its center, Earth's temperature is about _____.
11. A _____ is any combination of interrelated, interacting components.
12. _____ is a principle stating that the geologic processes operating today also operated in the past.
13. _____ is a principle that states that occasional huge catastrophes alter the course of Earth history.
14. A _____ _____ occurs when a small initial perturbation affects another component of the system, which amplifies the original effect.
15. The increased carbon dioxide level has raised the Earth's average temperature by _____°C since the Industrial Revolution.

Fill-in-the-Blank

1. The Earth's core is part of the _____.
   a. geosphere
   b. atmosphere
   c. hydrosphere
   d. biosphere

2. Oceans cover _____ percent of the Earth's surface.
   a. 0.7
   b. 7
   c. 17
   d. 71

3. Oceans contain _____ percent of the Earth's water.
   a. 2.5
   b. 15
   c. 65
   d. 97.5

4. Water frozen in glaciers is part of Earth's _____.
   a. geosphere
   b. atmosphere
   c. hydrosphere
   d. biosphere

5. Earth's core consists mostly of _____.
   a. iron and nickel
   b. frozen water
   c. solid rock
   d. gas

6. The rigid, outer part of Earth, including the crust and the uppermost mantle, is called the _____.
   a. atmosphere
   b. geosphere
   c. lithosphere
   d. hydrosphere

7. Liquid freshwater amounts to about _____ percent of Earth's total water.
   a. 0.64
   b. 6.4
   c. 16.4
   d. 60.4

8. The atmosphere consists mainly of _____.
   a. nitrogen and argon
   b. nitrogen and oxygen
   c. oxygen and carbon dioxide
   d. carbon dioxide and argon

9. A _____ is a combination of interacting components that form a complex whole.
   a. feedback mechanism
   b. catastrophic event
   c. threshold effect
   d. system

10. Earth's surface systems are ultimately powered by the _____.
    a. Moon
    b. mantle convection
    c. Sun
    d. radioactive decay in the Earth's interior

11. *Homo sapiens* and our direct ancestors have been abundant on our planet for about _____ percent of Earth history.
    a. 0.1
    b. 1.0
    c. 10
    d. 50

12. Geologists estimate that Earth formed _____ years ago.
    a. 4.6 billion
    b. 46 million
    c. 4.6 million
    d. 46 billion

13. _____ means that the geologic processes operating today also worked in the past.
    a. Gradualism
    b. Uniformitarianism
    c. Catastrophism
    d. Density layering

14. The Earth's population (in mid-2009) was about _____ people.
    a. 2.3 billion
    b. 4.5 billion
    c. 6.7 billion
    d. 8.2 billion

15. According to current trends in Earth's population development, it is likely that pressure on Earth's resources will _____.
    a. increase
    b. decrease
    c. not change
    d. be insignificant

Multiple Choice

1. Earth's crust is part of the:
    a. hydrosphere.
    b. biosphere.
    c. geosphere.
    d. atmosphere.

2. The Earth's mantle is found in the:
    a. hydrosphere.
    b. geosphere.
    c. biosphere.
    d. atmosphere.

3. The core is:
    a. the least dense layer of the Earth.
    b. the densest layer of the Earth.
    c. the same density as the crust.
    d. composed of liquid magma.

4. Ground water saturating rock underground is a component of the:
    a. atmosphere.
    b. hydrosphere.
    c. biosphere.
    d. geosphere.

5. Water frozen in glaciers is a component of the:
    a. geosphere.
    b. biosphere.
    c. hydrosphere.
    d. atmosphere.

6. Oceans:
    a. cover 7 percent of the Earth.
    b. cover 0.7 percent of the Earth.
    c. cover 71 percent of the Earth.
    d. cover 91 percent of the Earth.

7. The crust is about:
   a. 5–10 km thick.
   b. 12–25 km thick.
   c. 7–70 km thick.
   d. 70–100 km thick.

8. The consequence of the vastness of geologic time is that:
   a. events that occur slowly become insignificant.
   b. events that occur slowly become significant.
   c. improbable events seldom occur.
   d. improbable events never occur.

9. Our Solar System formed:
   a. when a fiery hot nebula in space coalesced under the force of gravity.
   b. from huge meteoroids that had been flying through intergalactic space.
   c. when another star exploded, shooting rocky debris into space.
   d. from a coalescing frigid cloud of dust and gas.

10. A tectonic plate is composed of:
    a. cool, rigid rock that rides on a continuous shell of molten magma.
    b. cool, rigid rock that rides on a plastic mantle layer.
    c. hot, plastic rock supported by a rigid foundation of cool rock.
    d. cool, rigid rock that floats on the Earth's molten core.

11. Which of the following is *not* a system?
    a. the human body
    b. the digestive organs in a human body
    c. a bacterium that lives within the small intestine
    d. an atom

12. The earliest known life forms existed on Earth:
    a. 38 million years ago.
    b. 544 million years ago.
    c. 1 billion years ago.
    d. 3.8 billion years ago.

13. The fundamental source of energy that drives Earth's surface systems—the atmosphere, hydrosphere, and biosphere—is:
    a. the Sun.
    b. the Earth's interior heat.
    c. meteorite impacts.
    d. the wind.

14. Gradualism states that:
    a. the Earth is uniform throughout its interior.
    b. the Earth's mantle is uniform, although it is different from the crust and core.
    c. geologic change occurs over long periods of time by a sequence of almost imperceptible events.
    d. catastrophic events, such as volcanic eruptions, alter the Earth.

15. Imagine that a system has been perturbed at a constant rate for a long time, but the system has barely changed. Suddenly, a small additional perturbation causes a large change in the system. This scenario is an example of:
    a. uniformitarianism.
    b. catastrophism.
    c. a threshold effect.
    d. a feedback mechanism.

True/False

1. At its center, Earth is as hot as the Sun's surface.

2. The hydrosphere includes water in streams, lakes, and oceans; in the atmosphere; and frozen in glaciers.

3. Ground water accounts for 71 percent of the Earth's water.

4. The Earth's atmosphere is a mixture of gases, mostly nitrogen and hydrogen.

5. The biosphere consists solely of the thin zone on the surface of the continents that is inhabited by life.

6. Below a thin layer of soil and beneath the ocean water, the outer layers of the Earth are composed entirely of molten rock.

7. The Earth's core is composed of hot, partially molten granite.

8. The Earth's mantle lies over the core, and the crust lies over the mantle.

9. More water exists in the Earth's atmosphere than in surface streams and lakes.

10. Oceans cover about 71 percent of the Earth.

11. All of Earth's spheres continuously exchange matter and energy.

12. The Earth's atmosphere acts as a blanket, retaining heat at night and dispersing direct solar heating during the day.

13. The Earth is about 460 million years old.

14. A giant meteorite smashing into Earth is an example of gradualism.

15. A feedback mechanism occurs when the environment initially changes slowly or not at all in response to a small perturbation, but after the threshold is crossed, an additional small perturbation causes rapid and dramatic change.

Answer Bank

Completion	Fill-in-the-Blank	Multiple Choice	True/False
1. crust, mantle, and core; p. 5	1. a; p. 5	1. c; p. 5	1. T; p. 5
2. biosphere; p. 7	2. d; p. 6	2. b; p. 5	2. T; p. 6
3. 97.5; p. 6	3. d; p. 6	3. b; p. 5	3. F; p. 6
4. hydrosphere; p. 6	4. c; p. 6	4. b; p. 6	4. F; p. 7
5. atmosphere; p. 7	5. a; p. 5	5. c; p. 6	5. F; p. 7
6. planetesimals; p. 5	6. c; p. 5	6. c; p. 6	6. F; p. 5
7. crust; p. 5	7. a; p. 6	7. c; p. 5	7. F; p. 5
8. tectonic plates; p. 6	8. b; p. 7	8. b; p. 9	8. T; p. 5
9. core; p. 5	9. d; p. 7	9. d; p. 4	9. F; p. 6
10. 6000°C; p. 5	10. c; p. 8	10. b; p. 6	10. T; p. 6
11. system; p. 7	11. a; p. 9	11. d; p. 7	11. T; p. 8
12. Uniformitarianism; p. 10	12. a; p. 9	12. d; p. 9	12. T; p. 7
13. Catastrophism; p. 11	13. b; p. 10	13. a; p. 8	13. F; p. 9
14. feedback mechanism; p. 12	14. c; p. 13	14. c; p. 10	14. F; p. 10
15. 0.6; p. 14	15. a; p. 14	15. c; p. 11	15. F; p. 11