APES Unit 2 The Physical World Review Sheet 2024

Part 1: Surface Layer

2.1 Information

1. What are the four main environmental systems?
2. **Describe** a source vs a sink. **Identify** sources and sinks for each cycle, especially carbon and nitrogen.
3. What is the hydrologic cycle and its driving force?
    a. How much of the water on earth is fresh?
    b. Where is the majority of earth's freshwater found?
4. What are the natural pathways of carbon in the carbon cycle?
    a. How are humans impacting the carbon cycle since the Industrial Revolution? Be specific.
    b. Describe the process of ocean acidification.
        - What is the chemical equation of the process?
        - How are calcium carbonate organisms affected?
        - What's the relationship between atm CO_2 and ocean pH levels?
        - What is the Keeling Curve? What's the reason for the annual fluctuation of atmospheric CO_2?
5. Diagram the nitrogen cycle, be sure to use chemicals and words. Label the steps and identify the flux mechanisms.
    a. How are humans impacting the nitrogen cycle? Be specific.
6. How is the phosphorus cycle different from the other cycles?
7. What is eutrophication? Describe how it occurs.

2.2 Information

8. What are the three main layers of the Earth?
    a. Where is the asthenosphere located? The lithosphere?
9. Describe the asthenosphere and the lithosphere. How are they similar? Different?
10. What are convection currents?
11. **List and describe** the three types of plate boundaries.
12. Given a map of different plates, can you identify key features?
    a. Know key geological features and their names (trench, ridge, subduction zone, oceanic plate, continental plate)
    b. What plate boundary forms the Mid-Atlantic Ridge? The Himalaya Mountains? The Marianas trench? The San Andreas Fault?
13. What are hotspots? What locations are examples of hotspots?
14. What are some environmental impacts of a volcanic eruption immediately after the eruption? 2 years after? Why?
15. What is an earthquake, and what are the key locations in which earthquakes can occur?
16. What is a tsunami and what locations have experienced tsunamis recently? Be able to describe how a tsunami can occur.
17. How can we worsen impacts of natural hazards? How can we mitigate these impacts?

*Remember this is a cumulative course where information learned will be discussed all year long, so please review prior units and expect a couple review multiple choice questions. =)

Part 2: Multiple Choice

Questions 1 – 3 refer to the listed suggestions A – E that is best for each question.

(A) Core
(B) Crust
(C) Mantle
(D) Lithosphere
(E) Asthenosphere

1. Surrounds the core and mostly is solid rock.

2. Outermost and thinnest zone of the Earth that lies under the continents and ocean.

3. The zone of hot, partially melted rock which can be deformed by heat and pressure allowing plate movement.

4. The San Andreas Fault line that lies in California is the result of what type of plate boundary?
   a. Divergent boundary b. Transform boundaries c. Subduction zones
   d. Convergent Boundary e. Mid-ocean fault lines

5. All of the following are true of tsunamis EXCEPT:
   a. In deep water, the waves are very far part and the crests are shallow
   b. Can be detected by a series of buoys
   c. Can be caused by underwater earthquakes
   d. Land damage can be reduced by healthy mangrove and coral reef systems
   e. Also called tidal waves when they are created from tidal surges on an opposing coast

6. Earthquakes can cause damage upon release of vibration through the surrounding rock, called a(n):
   a. Epicenter b. Seismic waves c. Richter scale d. Amplitude e. Fault zone

7. Transfer of carbon between organisms depends primarily on
   a. Fuel combustion and decomposition
   b. Photosynthesis and cellular respiration
   c. Soil bacteria and precipitation
   d. Volcanic activity and organic decay

8. Nitrogen is a major component in all of the following EXCEPT :
   a. Proteins
   b. Nucleic Acids
   c. Nitrate
   d. Ammonia
   e. Groundwater

9. Ammonium ions are converted to nitrite ions and nitrate ions through the process of:
   a. Nitrification
   b. Nitrogen fixation
   c. Denitrification
   d. Assimilation
   e. Ammonification

10. Carbon is the largest component of _____ once it is found in the oceans.
    a. Calcium carbonate shells
    b. Oceanic sediments, eventually leading to the formation of sedimentary rocks formations
    c. Ocean water
    d. Calcium carbonate shells, eventually leading to the formation of sedimentary rock formations
    e. DNA

11. Which of the following is ***not*** one of the common phosphorus reservoirs in the ecosystem?
    a. Soil b. Organisms c. Atmosphere d. Rocks

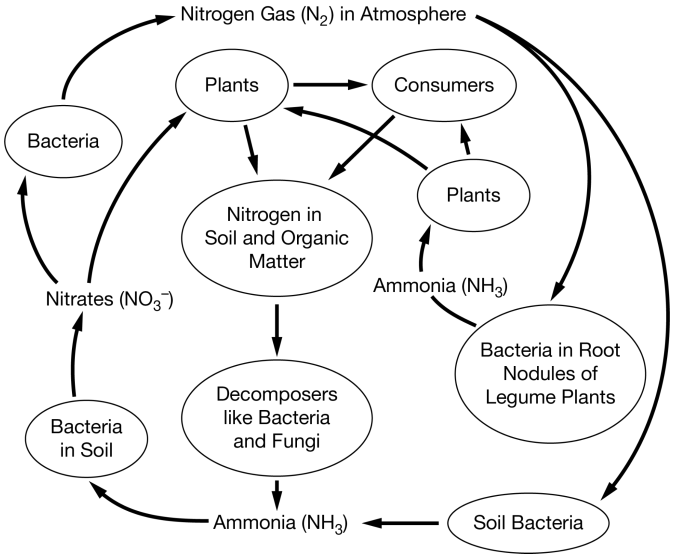
12. The major plant nutrient most likely to be a limiting factor is:
    a. Phosphorous
    b. Calcium
    c. Manganese
    d. Potassium
    e. Nitrogen

13. What type of formation would you expect to find at a divergent plate boundary?
    I. Mid-ocean ridge
    II. Volcanoes
    III. Oceanic trenches

    a. I only
    b. II only
    c. III only
    d. I and II only
    e. II and III only

14. Which of the following processes is illustrated by the downward arrows from the atmosphere that show the conversion of nitrogen gas into usable forms available to producers?

A) Nitrogen assimilation
B) Nitrogen fixation
C) Photosynthesis
D) Weathering

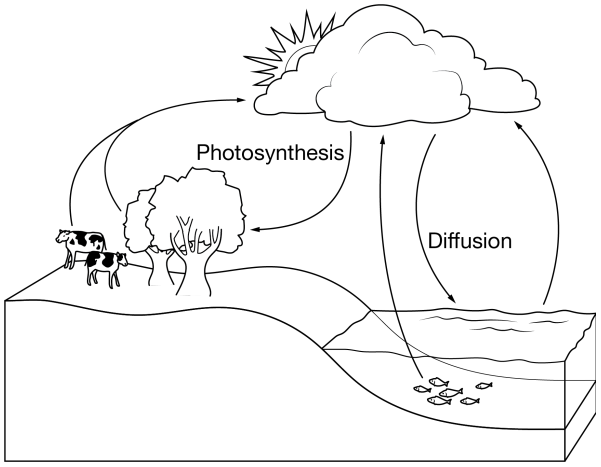


15. Using the diagram in #14, which of the following types of organisms are required to complete the nitrogen cycle, including the process of denitrification?

A) Bacteria
B) Producers
C) Consumers
D) Fungi

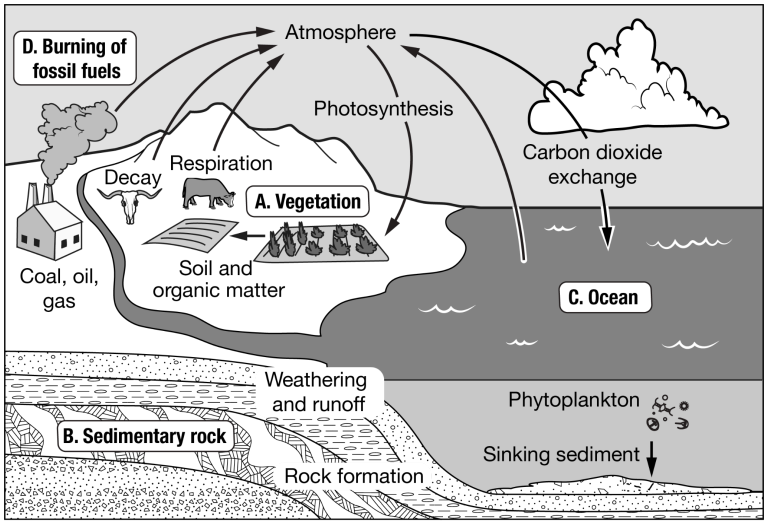
16. Which of the following biogeochemical cycles includes the processes of buffering ocean pH and photosynthesis, as shown in the diagram?

A) The carbon cycle
B) The nitrogen cycle
C) The phosphorus cycle
D) The potassium cycle



17. Which of the following boxes represents a carbon source in the image below?

A) A
B) B
C) C
D) D



18. Using the diagram to the right, Which box represents a carbon sink that holds carbon compounds for the shortest period of time?

A) A
B) B
C) C
D) D

Multiple Choice Answer Key:

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