Choose the best answer and write <u>on the answer sheet provided</u>.

1. Which of the following is LEAST likely to be an effect of global warming?
(a) Loss of fertile delta regions for agriculture
(b) Change in global patterns of precipitation
(c) Extinction of some species that have narrow temperature requirements
(d) Decreased rate of photosynthesis in vegetation
(e) Increased frequency of hurricanes

2. Of the following, which has the greatest permeability?
(a) Clay
(b) Loam
(c) Sand
(d) Silt
(e) Humus

3. A country currently has a population of 100 million and an annual growth rate of 3.5 percent. If the growth rate remains constant, what will be the population of this country in 40 years?
(a) 150 million
(b) 200 million
(c) 300 million
(d) 400 million
(e) 800 million

4. Which of the following greenhouse gases has the greatest heat-trapping ability per molecule?
(a) Carbon dioxide
(b) Carbon monoxide
(c) Chlorofluorocarbon
(d) Methane
(e) Nitrous oxide

5. Which of the following would be expected to result from a collision between a continental lithospheric plate and an oceanic lithospheric plate?

a) A volcanic island arc
b) A chain of coastal volcanic mountains
c) A mid-ocean ridge
d) A transform fault

6. Which of the following activities is likely to have the highest impact on biodiversity?

a) Copper mining in Chile
b) Soil erosion on the slopes of the Rocky Mountains
c) Large-scale deforestation of the Amazon or Congo basin tropical forests
d) Increased use of ethanol fuels in the United States

7. Which of the following has provided the most information about the structure of Earth's core, mantle, and lower crust?

a) Measurement of the intensity and fluctuations of Earth's magnetic field
b) Examination of flowing lava
c) Collection of samples from deep boreholes drilled into Earth
d) Studies of the timing and distribution of seismic waves passing through Earth

8. Which of the following rocks would most likely form from the metamorphism of a shale?

a) Granite
b) Quartzite
c) Schist
d) Marble

9. Which of the following states that geological processes that operate now have operated in the past?

a) The law of reflection
b) The law of thermodynamics
c) The principle of superposition
d) The principle of uniformitarianism

10. In an area where a river has cut deep into Earth, there are several layers of very different rock exposed. The oldest rock layer is most likely to be the layer that is

a) Below the other layers
b) The thickest layer
c) The most rich in fossils
d) Igneous intrusive rock

11. A student models an impact crater on the Moon by dropping a marble from a known height onto a pan of smooth flour. Before reaching any conclusions about the results of this simple experiment, the student repeats the activity several times so that

a) differences produced by standard variability in conditions become clear.
b) she can produce as large a crater as possible before measuring a diameter.
c) her ability to simulate a meteor impact becomes more realistic with practice.
d) she can illustrate a perfectly circular crater for her write-up of the experiment.

12. Evidence suggests that Earth is about 4.6 billion years old, even though no Earth rocks have been found that can be dated at more than 4 billion years old. This discrepancy is *most* likely caused by Earth's original crust being

a) Difficult to date so precisely
b) Subject to extensive erosion
c) Blasted away during Earth's formation
d) Destroyed by solar radiation

13. Which of the following is the best evidence that Earth's continents were once in vastly different positions than they are today?

a) Penguins are found only in the Southern Hemisphere
b) Fossils of tropical plants are found in Antarctica
c) Volcanoes encircle the Pacific Ocean
d) Major rivers form deltas from continental erosion

14. Which of the following provides evidence for plate tectonics?

a) Sea-floor topography
b) Ocean currents
c) Coriolis effect
d) Atmospheric temperatures

15. A rift valley is evidence of which kind of plate boundary?

a) Convergent
b) Divergent
c) Transform
d) Uniform

16. The convergence of two continental plates would produce

a) Island arcs
b) Rift valleys
c) Folded mountains
d) Trenches

17. It is generally true that igneous rocks

a) Contain primarily evaporates
b) Can be scratched with a penny
c) Normally contain fossils
d) Are composed of silicate minerals

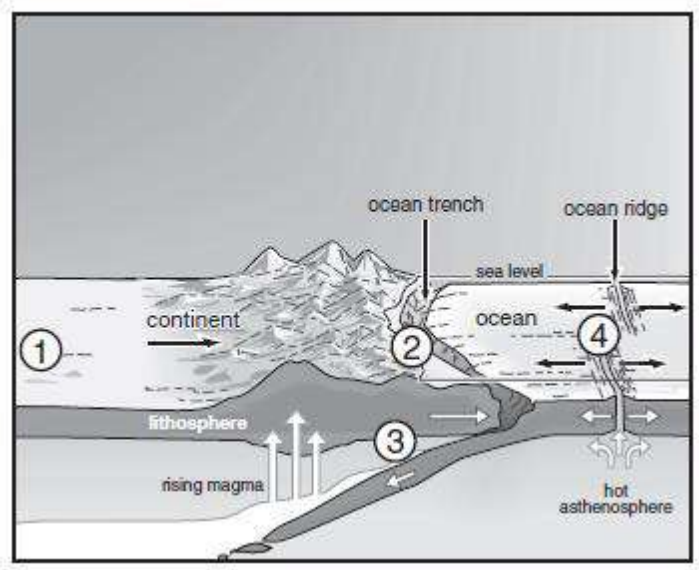
18. What energy resources is made possible by the volcanic activity in Iceland?

a) Hydroelectricity
b) Nuclear power
c) Geothermal energy
d) Solar energy

19. Earthquake activity in California is primarily caused by

a) The lowering of aquifer levels
b) The interaction of tides with the coast
c) Mining activity during the nineteenth century
d) Plates grinding past each other along active faults

20. At which location would an earthquake be least likely to occur?

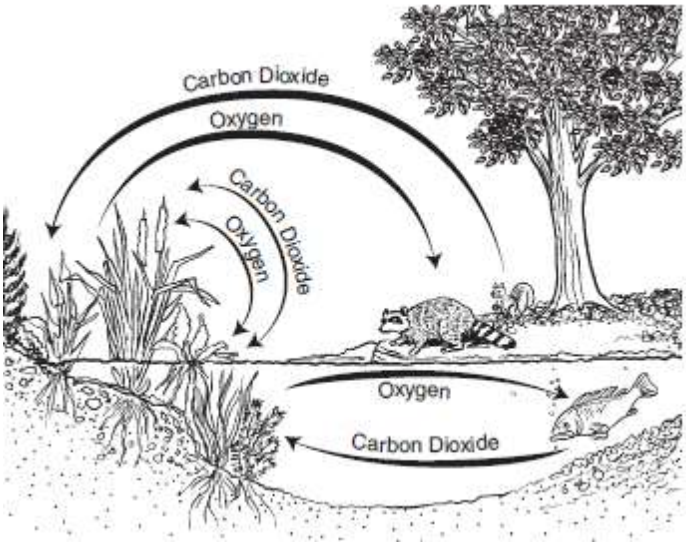


a) 1
b) 2
c) 3
d) 4

21. Scientists have found fossils of tropical plants in Antarctica. How could tropical plants have grown in Antarctica?

a) At one time, Earth's entire surface was a tropical rain forest
b) At one time, Antarctica was located closer to the equator
c) The rotation of Earth has increased, causing cooling of the atmosphere
d) Catastrophic volcanic eruptions melted the ice and exposed the soil to sunlight

22. Which of these scenarios is *best* illustrated by this diagram?



a) Animals under water eat plants
b) Land animals exhale oxygen into water
c) Water-dwelling animals breathe carbon dioxide
d) Plants can take in carbon dioxide from air or water

23. The table below lists the gases coming from a modern Hawaiian volcano. If ancient volcanoes gave off the same gases, which gas would have been *most* helpful in the development of early life-forms that could carry out photosynthesis?

Analysis of Gases From a Hawaiian Volcano

Gas	Amount
H_2O (steam)	79%
CO_2	12%
SO_2	6.5%
N_2	1.5%
H_2, CO, Cl_2, and Ar	trace

a) N_2
b) SO_2
c) CO_2
d) Cl_2

24. The primitive atmosphere of Earth was deficient in free oxygen. What process was primarily responsible for the development of the present percentage of free oxygen in the Earth's atmosphere?

a) Outgassing
b) Photosynthesis
c) Volcanic eruptions
d) Oxidation of iron-based minerals

25. Most of the molecular oxygen in the early atmosphere of Earth resulted from

a) Photosynthesis in primitive plants
b) Decaying primitive plants and animals
c) Volcanic eruptions
d) Lightning striking Earth

26. Why does radioactive dating of meteorites give a more accurate age for Earth than radioactive dating of rocks at Earth's surface?

a) Most rocks that first formed on Earth's surface have since undergone major geologic changes.
b) Most rocks found on Earth's surface are older than most meteorites.
c) Most meteorites contain minerals that are the same age as those found on Earth's surface.
d) Most meteorites are made of the same type of iron that is found in Earth's core.

27. Continued high agricultural production by farms in the United States depends most on which of the following natural resources?

a) Coal
b) Limestone
c) Gypsum
d) Petroleum

28. **Writing prompt:**
Our school is named after the largest estuary in our country and we are fortunate to have it as our backyard classroom. In the space provided on your answer sheet, explain in detail how the Chesapeake Bay formed, when it formed and what events shaped the underlying geology of the lower Bay region.

II. Geography of the Chesapeake Bay Watershed

For problems 1-6, use the watershed map on the following page to correctly name each state within the Chesapeake Bay Watershed

1. _____ 2. _____

3. _____ 4. _____

5. _____ 6. _____

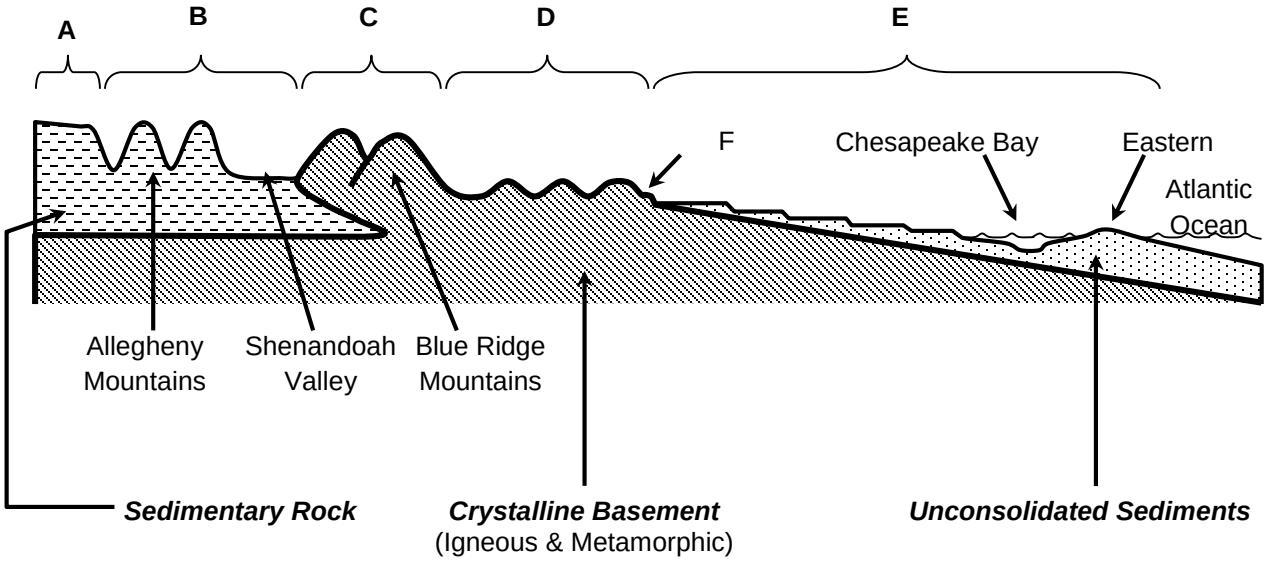
For problems 7-14, use the watershed map on the following page to correctly name each river/water body associated with the Chesapeake Bay Watershed

7. _____ 8. _____

9. _____ 10. _____

11. _____ 12. _____

13. _____ 14. _____



_____ 15. Coastal Plain

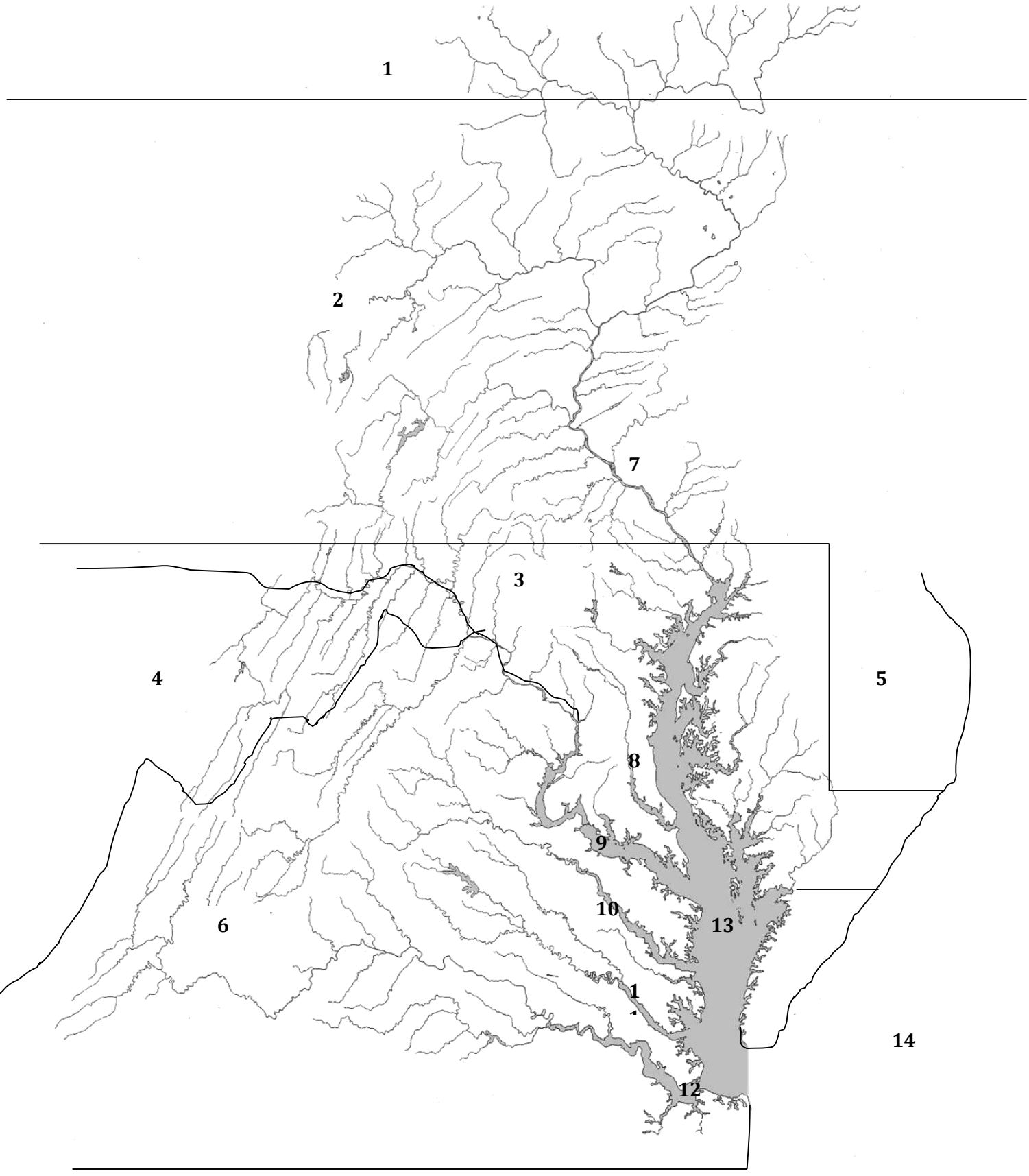
_____ 16. Valley & Ridge

_____ 17. Fall Zone

_____ 18. Piedmont

_____ 19. Appalachian Plateau

_____ 20. Blue Ridge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