1. Sedimentary rocks form due to the layering of clastic or organic materials over time. Which of the following is NOT a type of sedimentary rock?
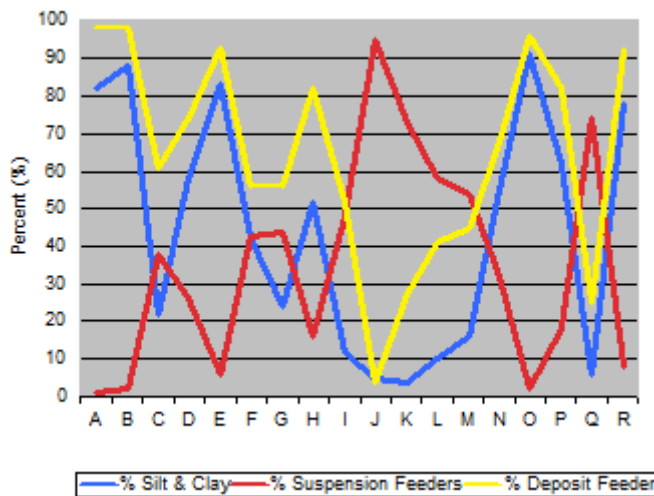
(A) Sandstone
(B) Shale
(C) Coal
(D) Limestone
(E) Basalt

2. Which of the following geologic events occurred during the Paleozoic Era?

I. First fish
II. First amphibians
III. First reptiles

(A) I only
(B) II only
(C) III only
(D) I and II only
(E) I, II, and III

3. The graph below shows the percent of deposit feeders (burrowing animals) and suspension feeders (filter feeders) at 18 sites on a continental shelf. The percent of silt and clay sediment at each site is also given. Use the graph to answer the following

question.

Which statement best compares the relationship of suspension feeders and deposit feeders to silt and clay sediment?

(A) Deposit feeders rely less on the abundance of silt and clay for survival than do suspension feeders.
(B) Deposit feeders rely more on the abundance of silt and clay for survival than do suspension

feeders.

(C) Deposit and suspension feeders have a similar dependence on the abundance of silt and clay for survival.

(D) The abundance of suspension feeders is directly related to the abundance of silt and clay.

(E) There is no clear relationship between suspension feeders and deposit feeders and the abundance of silt and clay.

4. Cells are able to use ATP on a regular basis by

(A) Storing ATP

(B) Adding two phosphate groups to a nucleotide

(C) Breaking ATP down into ADP, phosphate, and energy

(D) Forming covalent bonds to generate new energy

(E) Releasing all its energy at once by breaking pyrophosphate bonds

5. What is the most important consequence of the crossing over that occurs during the prophase stage of meiosis?

(A) It promotes variation.

(B) It replicates chromosomes.

(C) It replicates DNA.

(D) It forms daughter cells.

(E) It reduces the number of chromosomes.

6. The Sun's energy is a byproduct of the inefficient reactions of

(A) Hydrogen gas to form carbon

(B) Hydrogen gas to form helium

(C) Helium to form positrons and neutrinos

(D) Nitrogen gas to form helium

(E) Nitrogen gas to form hydrogen gas

7. A liver cell increases the rate at which glycogen is broken down by

(A) Decreasing the catalytic rate of glycogen synthase

(B) Increasing the catalytic rate of glycogen synthase

(C) Adding a phosphate group to turn off covalent modulation

(D) Decreasing the catalytic rate of glycogen phosphorylase

(E) Increasing the catalytic rate of glycogen phosphorylase

8. The part of the Moon that is illuminated is dependent on the

(A) Position of the Moon and Earth

(B) Amount of energy the Moon is emitting

(C) Angle between the Earth, Moon, and Sun

(D) Earth's revolution around the Sun
(E) Change in Earth's tilt on its axis

9. When the nucleus of a radium isotope (with 88 protons and 138 neutrons) undergoes alpha decay, what results?

(A) 1 helium atom (He^4) with 2 protons
(B) 1 radon atom (Rn^{222}) with 86 protons
(C) 1 francium atom (Fr^{222}) with 87 protons
(D) 1 actinium atom (Ac^{222}) with 89 protons
(E) 1 thorium atom (Th^{232}) with 90 protons

10. The half-life of strontium-90 is 28 years. Scientists measured the atmospheric concentration of strontium-90 and found it to be $1/8$ the amount that was first measured many years ago. How many years have passed since their first measurement?

(A) 14 years
(B) 56 years
(C) 28 years
(D) 84 years
(E) 12 years

CLEP Natural Science Practice Question Answer Key

1. (E) Basalt is a type of extrusive igneous rock formed from the cooling of lava. Coal (C) and limestone (D) are sedimentary rocks made up of organic plant and animal remains. Sandstone (A) and shale (B) are sedimentary rocks made from the clastic material of sand and clay, respectively.
2. (D) The Paleozoic Era was characterized by the evolution of the first fish and, later, the first amphibians. Reptiles did not appear until some time during the Mesozoic Era.
3. (B) The number of deposit feeders at all sites is directly proportional to the percentage of silt and clay present in the area. Deposit feeders are found in greater numbers where there is a high percentage of silt and clay. They are found in lower numbers where there is a lower percentage of silt and clay. This suggests that deposit feeders are more affected by changes in the amount of silt and clay than are suspension feeders. The number of suspension feeders is indirectly related to the percentage of silt and clay at all sites.
4. (C) Cells continually make ATP through the synthesis of ADP, inorganic phosphate, and energy.
5. (A) Crossing over occurs during the first prophase stage of meiosis I. Two chromosomes of a homologous pair may exchange segments. This breaking and reforming of homologous chromosomes allows genes to change the chromosome they are linked to. This is important in producing a greater possibility of genetic variation.

6. (B) The Sun is composed mostly of hydrogen gas, which reacts with other hydrogen gas to form helium. Some matter is lost during the reactions, as 4 H atoms combine to form 1 He atom. This lost matter is converted to energy. These reactions occur continually, and billions occur every second.

7. (E) Glycogen phosphorylase is the enzyme that breaks down glycogen to glucose. This process is called glycogenolysis. To increase the rate at which glycogenolysis occurs, a liver cell must increase the catalytic rate of glycogen phosphorylase.

8. (C) The Moon appears illuminated because it reflects light from the Sun. The Moon does not produce or emit its own light. The part of the Moon that is illuminated when viewed from Earth is dependent on the angle between the Earth, Moon, and Sun.

9. (B) A radium isotope with an atomic mass of 226 (138 neutrons + 88 protons) that undergoes alpha decay will emit an alpha particle, which consists of 2 protons and 2 neutrons. This causes the atomic mass to decrease by 4 and the atomic number to decrease by 2. This results in a radon atom with an atomic number of 86 and an atomic mass of 222.

10. (D) Since half the amount of strontium-90 decays in 28 years, it would take 3 half-lives for it to decay to $1/8$ its original amount ($1/2 * 1/2 * 1/2 = 1/8$). Since one half-life is 28 years, three half-lives would be 84 years (28 x 3 = 84).