Biology 10

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Lecture Exam 1 Practice Questions

Lecture 1:

1. What is biology?

2. Imagine you notice a lot of dead fish washing up on the shore of a lake day after day. You also notice a storm pipe leading directly into the lake, where runoff from the surrounding neighborhood empties into the lake during rainstorms. You call your local environmental protection agency and tell them that dirty storm water is killing the lake's fish. Was your process scientific in coming to that conclusion? Why/why not? What variables could be contributing to the fish's death?

3. When the economy crashes, the federal government takes in less money in taxes. How might this affect scientific research?

4. True/False: We as human beings are animals and a part of the domain Eukarya.

5. True/False: Human beings and the bacteria living in humans' stomachs descended from the same ancestor.

6. What is a hypothesis in the context of science?

7. A student gets upset with a professor in a lecture about evolution because she says that God created all the organisms on Earth 4,000 years ago just like it says in the Bible. The professor tells the student she is being unscientific in coming to that conclusion. What does he mean by that?

8. Why are people with diabetes unable to break down glucose?

9. Why is a rock not considered alive?

Lecture 2:

1. What is the difference between a covalent and an ionic bond?

2. What has greater mass, a proton or an electron?

3. True/false: A change in the number of neutrons in an atom will change its atomic number.

4. Given that the atomic number of neon is 10, do you think neon atoms would react with other atoms? Why/why not?

5. What type of bond does the oxygen atom form with the hydrogen atoms in a molecule of water?

6. What type of bond do water molecules form with each other?

7. Why does water demonstrate the property of cohesion (surface tension)?

8. What does pH measure?

9. How did the information presented in the reading on salt violate the traditional laws of chemistry as we know them?

Lecture 3:

1. What was the point of Dr. B bringing (and eating) a chocolate frosted donut to class?

2. What kind of organic molecule are steroids? Are all steroids bad for you?

3. What are the building blocks, or monomers, of proteins?

4. Should someone on a no-carbs diet be allowed to eat candy bars? Why/why not?

5. Imagine a frog ingests a chemical that dramatically changes the pH inside of its cells; how might this affect the frog's ability to function?

6. What do we mean by the primary structure of a protein?

7. Changes in atmospheric CO2 lead to an increase in the acidity of seawater (because of the reaction between seawater and CO2). Does the pH go up or down?

8. True/false: The cocoa plant, from which we get chocolate, has DNA in its cells.

9. Why are some people unable to digest milk?

Lecture 4:

1. Imagine that in using the analogy of the office for a cell, Dr. B says that there has been a security breach in the office; what does that mean in the cell?

2. Why is the rough endoplasmic reticulum considered rough?

3. What is one argument in favor of allowing federally-funded embryonic stem cell research and one argument against?

4. In class, we read an article about how scientists were able to quickly create stem cells in mice by shocking them; where did the scientists get this idea from?

5. Does a pencil sitting on top of a desk have more or less potential energy than a pencil on the floor, all else being equal?

6. Do zebra cells have similar structures and organelles as beetle cells?

7. What is the function of the lysosome?

8. Which existed on Earth first, prokaryotes or eukaryotes?

9. Why might mutations in the DNA of a cell affect the proteins in the cell?