

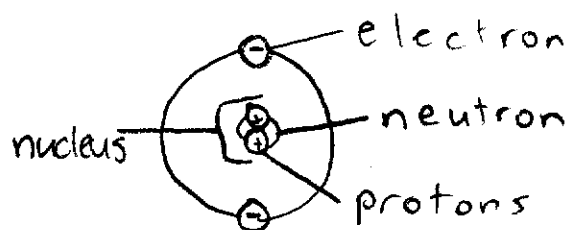
Isaac Martinez

Chapter 2 Questions

1. How does the pH scale work?

It from a scale of 0-14, 14 being the least acidic (lower H^+ concentration) and 0 being the most acidic (greater H^+ concentration)

2. What are the parts of an atom?



3. What is a chemical reaction?

When molecules rearrange by breaking existing chemical bonds and forming new ones. The reactants make a chemical reaction in order to make the product.

4. What's an ionic bond?

The attraction between oppositely charged ions.

5. What's an isotope?

It's an element in a different form. It has the same numbers of protons and electrons but different numbers of neutrons.

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Questions Chapter 10

1. What is the difference between RNA, tRNA, and mRNA?

RNA made in the process of Transcription. mRNA is used from Transcription to be translated by tRNA.

2. What is the structure of DNA?

A molecule of DNA has two polynucleotide chains. Each nucleotide consists of a nitrogen base, a sugar, and a phosphate group.

3. How does a DNA molecule make a copy of itself?

The parental DNA untwists by an enzyme and it serves as a template for a new strand of DNA. So both daughter DNA molecules consist of one new strand of DNA and one old strand of the parental DNA.

4. How does DNA make proteins?
DNA goes through the process of transcription in the nucleus. It makes RNA which then goes through the process of translation to make proteins in the cytoplasm.

5. How does a mutation occur?

A mutation occurs when one or more nitrogen bases is replaced by a different nitrogen base. That's called base substitution. When a nitrogen base gets deleted or added that also makes a mutation. That's called base insertion or deletion.

Chapter 1

Bryon, William, Steve

1) What is the difference between natural selection and ~~the~~ artificial selection?

- Natural selection is controlled by nature while artificial selection is controlled by mankind.

2) What are the steps in the scientific method?

- Observation, question, hypothesis, prediction, experiment, results, conclusion.

3) What are the different themes in biology?

- Structure equals function, common ancestor,

Chemistry

What is the difference between a solid and a liquid?

Solid bond is stronger than liquid bond. In solid, molecules are packed closely together and have less freedom of movement. In liquid, molecules are more spread out and can move more freely.

Why is it important to know the difference between solid and liquid?

It is important to know the difference between solid and liquid because it helps us understand the properties of different materials and how they behave under different conditions.

What is the difference between a solid and a gas?

Solids and gases are both states of matter, but they have very different properties. Solids have a fixed shape and volume, while gases have no fixed shape or volume and expand to fill their container.

What is the difference between a solid and a plasma?

Plasma is a state of matter that is formed when a gas is heated to such a high temperature that the atoms or molecules break apart into ions and electrons. It has unique properties that are different from solids, liquids, and gases.

Why is it important to know the difference between solid, liquid, gas, and plasma?

Knowing the difference between these four states of matter is important because it helps us understand the behavior of different materials and how they interact with each other and with their environment.

Chapter 3

- 1) How is a protein formed?
- 2) What are the differences between the types of organic molecules?
- 3) What determines the proteins structure?
- 4) What are the functions of the different types of molecules?
- 5) What determines the structure of the different molecules?

1) A protein is formed by the different sequence of amino acids.

2) The differences are the structure.

3) Amino acids determine the protein's structure.

4) Carbohydrates - primarily provide energy

lipids - are reserves and store energy

proteins - direct cell functions

nucleic acids - they provide the directions to build proteins

5) The make up of carbon, hydrogen, nitrogen and oxygen determine the structure of the different organic molecules.

Chapter 4

- 1) What are the main differences between light microscopes and electron microscopes?
- 2) What are the main differences between Eukaryotic and Prokaryotic cells?
- 3) What are the differences between animal and plant cells?
- 4) What are the differences between rough and smooth ER's?
- 5) What is the function of the Mitochondria

- 1) Light microscopes use light, while electron microscopes use a beam of electrons.
- 2) Eukaryotic cells are larger and have a more complex structure while prokaryotic cells are simple.
- 3) Plant cells have cell walls and a chloroplast.
- 4) The rough ER has ribosomes on it that make membrane proteins and secretory proteins. Smooth ER has no ribosomes ~~on it~~.
- 5) The mitochondria produce ATP.

Q: What is the function of the plasma membrane?

The plasma membrane is a phospholipid bilayer.

Q: How does osmosis work?

Water will diffuse across the membrane along its concentration gradient from an area of higher water to one of lower water concentration.

Q: What is the difference between isotonic, hypertonic, and hypotonic solutions?
Isotonic solution: A high concentration of solutes, equal to the concentration of solutes in the cell. It causes no net movement of water and the cell remains the same.
Hypertonic solution: A high concentration of solutes, higher than the concentration of solutes in the cell. It causes water to move out of the cell, causing it to shrink.
Hypotonic solution: A low concentration of solutes, lower than the concentration of solutes in the cell. It causes water to move into the cell, causing it to swell.

Q: What is the difference between active and passive transport?

No, it also requires a transport protein.

Q: What is the function of an enzyme?

Enzymes are specialized proteins that speed up chemical reactions and reduce the activation energy.

Q: What are the factors that affect enzyme activity?

Temperature, enzyme concentration, pH affect enzyme activity.

Q: How does ATP provide energy for cells?

ATP is the energy currency of the cell. It stores energy in its phosphate bonds. When a phosphate bond is broken, energy is released to power cellular processes.

Chapter 6

1. What is the function of ATP synthase?
 - To produce ATP by pumping H^+ molecules into the cell
2. What happens during glycolysis?
 - 2 Pyruvic acid molecules, 4 ATP molecules, and 2 NADH molecules are made by the breakdown of 1 glucose molecule
3. What are the inputs and outputs of the Citric acid cycle?
 - Inputs: 1 Acetic Acid molecule, ADP, one P molecule, 3 NAD^+ , 1 FAD
 - Outputs: 2 CO_2 molecules, 1 ATP, 3 NADH, 1 $FADH_2$
4. How does fermentation function in muscle cells?
 - It creates 2 lactic acid molecules in muscle cells
5. What is the difference between aerobic cells and anaerobic cells?
 - Aerobic cells use oxygen while anaerobic cells do not.