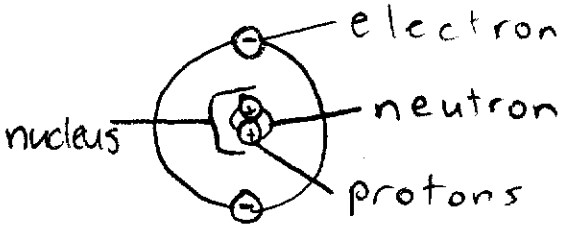
Isaac Martinez

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 strands. 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 have one new strand of DNA and one old strand of the parent DNA.

4. How does DNA make [illegible]

DNA goes [illegible] process of transcription in the nucleus. It makes RNA which then goes through the process of translation to [illegible] 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 is called base substitution. When a nitrogen base gets deleted or added that also makes a mutation. Those are called base insertion or deletion.

Chapter 1

Bryan, William, Steve

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

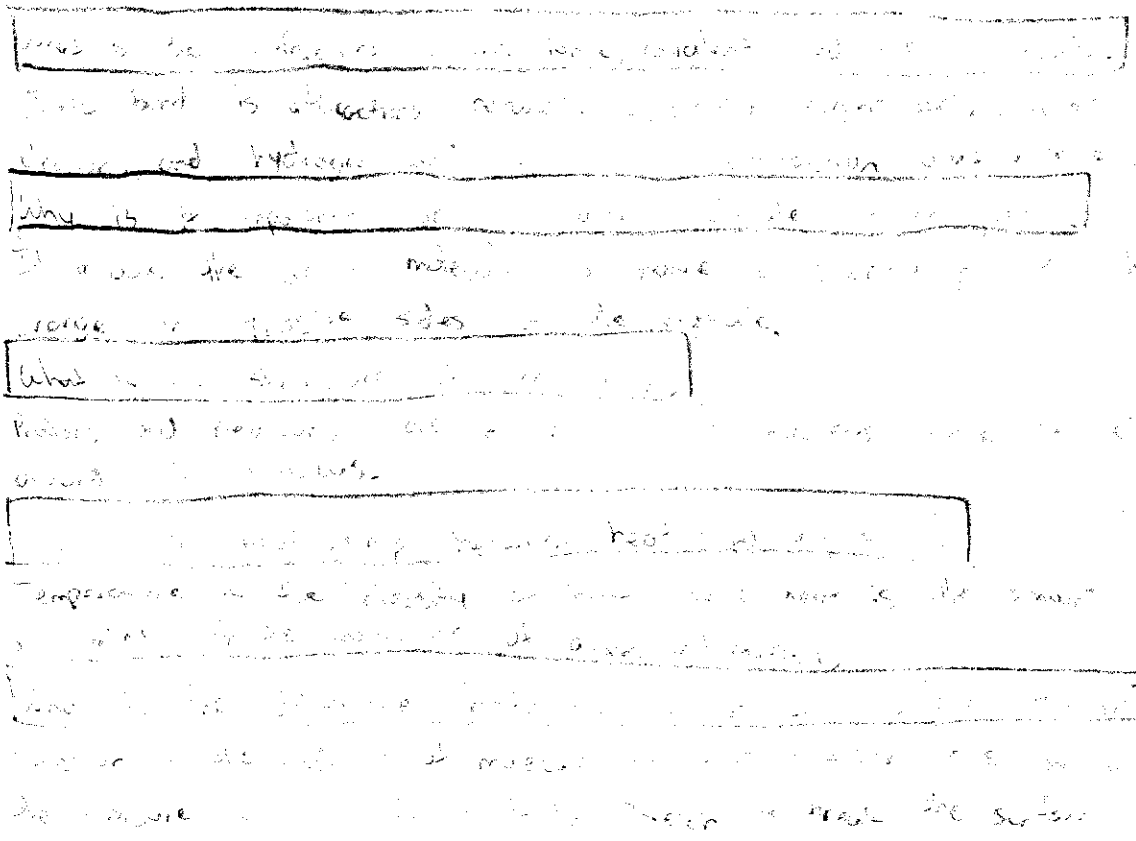
- Natural selection is controlled by Nature while artificial selection is controlled by mankind.

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,



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 animals 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 uses light, while electron microscopes uses 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 membran proteins and secretory proteins. Smooth ER has no ribosomes.
5) the mitochendria produces ATP.

What is the structure of the [illegible]?

The plasma membrane is a phospholipid bilayer.

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.

[illegible]

[illegible] hypertonic solution [illegible] [illegible] [illegible] to equal concentration of solutes and [illegible].

[illegible]

No, it uses energy to transport [illegible].

What is the function of [illegible]?

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

What are the factors that affect enzyme activity?

Temperature, enzyme concentration, pH affect enzyme activity.

How does [illegible]?

[illegible] hydrolyzing from ATP to [illegible] the energy is released [illegible] the [illegible] work.

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 glycose 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.