



Practice Worksheet on Biology and Earth Science

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Subject: Science

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Long Answer Questions

1. Explain the scientific method in detail, outlining each step and its significance.
2. Compare and contrast the processes of photosynthesis and cellular respiration, highlighting their key similarities and differences.
3. Describe the theory of natural selection and its role in evolutionary change, providing relevant examples.
4. Explain the theory of plate tectonics and its impact on the Earth's geological features.
5. Describe the structure of a water molecule and explain how this leads to its unique properties.
6. Explain the role of enzymes as biological catalysts, emphasizing their mechanism of action and significance in biological processes.

7. Describe the process of DNA replication, highlighting its key features and the significance of semi-conservative replication.

8. Compare and contrast mitosis and meiosis, outlining their roles in cell division and genetic variation.

Multiple Choice Questions

1. What is the primary function of chloroplasts in plant cells?

- a) Option A
- b) Option B
- c) Option C
- d) Option D

2. Which of the following is NOT a characteristic of living organisms?

- a) Option A
- b) Option B
- c) Option C
- d) Option D

3. What type of bond holds together the two strands of a DNA molecule?

- a) Option A
- b) Option B
- c) Option C
- d) Option D

4. Which of the following is the basic unit of heredity?

- a) Option A
- b) Option B

- c) Option C
- d) Option D

5. What process converts light energy into chemical energy in plants?

- a) Option A
- b) Option B
- c) Option C
- d) Option D

6. Which type of cell division results in genetically identical daughter cells?

- a) Option A
- b) Option B
- c) Option C
- d) Option D

7. What is the name of the process that converts glucose into ATP?

- a) Option A
- b) Option B
- c) Option C
- d) Option D

8. Which theory explains the movement of Earth's tectonic plates?

- a) Option A
- b) Option B
- c) Option C
- d) Option D

Answer Key

Long Answer Questions - Expected Responses

1. Explain the scientific method in detail, outlining each step and its significance.

Expected Answer: The process involves understanding the problem, gathering data, forming a hypothesis, experimenting, analyzing results, and drawing conclusions.

2. Compare and contrast the processes of photosynthesis and cellular respiration, highlighting their key similarities and differences.

Expected Answer: Photosynthesis converts light energy into chemical energy, storing it in glucose. Cellular respiration breaks down glucose to release energy for cellular processes.

3. Describe the theory of natural selection and its role in evolutionary change, providing relevant examples.

Expected Answer: Natural selection favors individuals with advantageous traits that enhance survival and reproduction. These traits become more common in the population over time.

4. Explain the theory of plate tectonics and its impact on the Earth's geological features.

Expected Answer: Plate tectonics explains the movement of Earth's lithospheric plates, causing earthquakes, volcanoes, and mountain formation.

5. Describe the structure of a water molecule and explain how this leads to its unique properties.

Expected Answer: Water molecules are polar due to uneven charge distribution, leading to hydrogen bonding and unique properties like high surface tension and specific heat capacity.

6. Explain the role of enzymes as biological catalysts, emphasizing their mechanism of action and significance in biological processes.

Expected Answer: Enzymes are biological catalysts that speed up biochemical reactions by lowering the activation energy without being consumed.

7. Describe the process of DNA replication, highlighting its key features and the significance of semi-conservative replication.

Expected Answer: DNA replication is semi-conservative, producing two identical DNA molecules, each with one original and one new strand. This ensures genetic continuity.

8. Compare and contrast mitosis and meiosis, outlining their roles in cell division and genetic variation.

Expected Answer: Mitosis produces two genetically identical daughter cells from a single parent cell, while meiosis produces four genetically diverse haploid gametes.

Multiple Choice Questions – Correct Answers

1. What is the primary function of chloroplasts in plant cells?

Correct Answer: Option B

2. Which of the following is NOT a characteristic of living organisms?

Correct Answer: Option C

3. What type of bond holds together the two strands of a DNA molecule?

Correct Answer: Option B

4. Which of the following is the basic unit of heredity?

Correct Answer: Option A

5. What process converts light energy into chemical energy in plants?

Correct Answer: Option D

6. Which type of cell division results in genetically identical daughter cells?

Correct Answer: Option B

7. What is the name of the process that converts glucose into ATP?

Correct Answer: Option C

8. Which theory explains the movement of Earth's tectonic plates?

Correct Answer: Option D