



Practice Worksheet on Cell Biology and Evolution

Generated for Yash Bhatnagar - Based on resource uploaded by user.

[Generate one yourself at LitGrades](#)

Subject: Biology

Date: 1/14/2025

Long Answer Questions

1. Explain the process of photosynthesis, including the reactants, products, and energy transformations involved.
2. Describe cellular respiration, highlighting the role of glucose, oxygen, and the energy produced.
3. Define enzymes and their role in biochemical reactions, explaining how they affect activation energy.
4. Explain DNA replication, including the terms 'semi-conservative' and its significance for cell division.
5. Describe mitosis and its significance for growth and repair in organisms.
6. Explain meiosis, emphasizing the reduction in chromosome number and genetic variation produced.

7. Explain the theory of natural selection and how it contributes to evolution.

8. Define evolution and describe some of the mechanisms that drive it.

Multiple Choice Questions

1. Which gas is released during photosynthesis?

- a) Oxygen
- b) Carbon Dioxide
- c) Water
- d) Glucose

2. Which process produces gametes?

- a) Mitosis
- b) Meiosis
- c) Binary Fission
- d) Budding

3. What is the main role of enzymes in biochemical reactions?

- a) Speed up reactions
- b) Lower activation energy
- c) Increase activation energy
- d) Change reaction products

4. Which model describes DNA replication?

- a) Semi-conservative
- b) Conservative
- c) Dispersive
- d) Random

5. What is the main energy source for cellular respiration?

- a) ATP
- b) Glucose
- c) Oxygen
- d) Carbon Dioxide

6. Which mechanism drives the adaptation of species to their environment?

- a) Genetic drift
- b) Mutation
- c) Natural Selection
- d) Gene flow

7. What does mitosis produce?

- a) Two genetically different daughter cells
- b) Two genetically identical daughter cells
- c) Four genetically different daughter cells
- d) Four genetically identical daughter cells

8. What are the purposes of mitosis?

- a) Growth only
- b) Repair only
- c) Growth and Repair
- d) Sexual Reproduction

Answer Key

Long Answer Questions - Expected Responses

1. Explain the process of photosynthesis, including the reactants, products, and energy transformations involved.

Expected Answer: The process of photosynthesis converts light energy into chemical energy in the form of glucose, using water and carbon dioxide as reactants and releasing oxygen as a byproduct.

2. Describe cellular respiration, highlighting the role of glucose, oxygen, and the energy produced.

Expected Answer: Cellular respiration breaks down glucose to generate ATP, the main energy currency of cells, utilizing oxygen and producing carbon dioxide and water as byproducts.

3. Define enzymes and their role in biochemical reactions, explaining how they affect activation energy.

Expected Answer: Enzymes act as biological catalysts, speeding up biochemical reactions by lowering the activation energy without being consumed in the process.

4. Explain DNA replication, including the terms 'semi-conservative' and its significance for cell division.

Expected Answer: DNA replication is semi-conservative; each new DNA molecule consists of one original strand and one newly synthesized strand. It's crucial for cell division and heredity.

5. Describe mitosis and its significance for growth and repair in organisms.

Expected Answer: Mitosis is a type of cell division resulting in two genetically identical daughter cells, important for growth and repair in multicellular organisms.

6. Explain meiosis, emphasizing the reduction in chromosome number and genetic variation produced.

Expected Answer: Meiosis is a type of cell division that produces four genetically unique haploid gametes (sex cells) from a single diploid cell, essential for sexual reproduction.

7. Explain the theory of natural selection and how it contributes to evolution.

Expected Answer: Natural selection is a mechanism of evolution where organisms with advantageous traits are more likely to survive and reproduce, passing their traits to the next generation.

8. Define evolution and describe some of the mechanisms that drive it.

Expected Answer: Evolution is the gradual change in the heritable characteristics of biological populations over successive generations, driven by mechanisms like mutation, natural selection, and genetic drift.

Multiple Choice Questions – Correct Answers

1. Which gas is released during photosynthesis?

Correct Answer: Carbon Dioxide

2. Which process produces gametes?

Correct Answer: Meiosis

3. What is the main role of enzymes in biochemical reactions?

Correct Answer: Lower activation energy

4. Which model describes DNA replication?

Correct Answer: Semi-conservative

5. What is the main energy source for cellular respiration?

Correct Answer: Glucose

6. Which mechanism drives the adaptation of species to their environment?

Correct Answer: Natural Selection

7. What does mitosis produce?

Correct Answer: Two genetically identical daughter cells

8. What are the purposes of mitosis?

Correct Answer: Growth and Repair