



Practice Worksheet on Cell Biology and Genetics

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Subject: Biology

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Long Answer Questions

1. Explain the process of photosynthesis and its significance in the ecosystem.
2. Describe the process of cellular respiration and its role in energy production.
3. Explain the theory of natural selection and provide examples of adaptation in different organisms.
4. Describe the process of DNA replication and its importance in cell division and inheritance.
5. Explain the process of mitosis and its significance in growth and repair of tissues.
6. Describe the process of meiosis and its importance in sexual reproduction and genetic variation.

7. Explain the function of enzymes and how their structure relates to their catalytic activity.

8. Explain the relationship between photosynthesis and cellular respiration.

Multiple Choice Questions

1. Which of the following is the primary product of photosynthesis?

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

2. Where does cellular respiration primarily occur in eukaryotic cells?

- a) Nucleus
- b) Mitochondria
- c) Ribosomes
- d) Chloroplasts

3. Which type of cell division is responsible for the production of gametes?

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

4. Which mechanism is the driving force behind adaptation and evolution?

- a) Natural Selection
- b) Genetic Drift
- c) Mutation

d) Gene Flow

5. What type of biological molecule acts as a catalyst to speed up biochemical reactions?

- a) Proteins
- b) Enzymes
- c) Carbohydrates
- d) Lipids

6. Which molecule serves as the primary energy currency of cells?

- a) DNA
- b) RNA
- c) ATP
- d) ADP

7. Which process generates ATP by breaking down glucose?

- a) Photosynthesis
- b) Cellular Respiration
- c) Fermentation
- d) Glycolysis

8. The gametes produced through meiosis are genetically _____.

- a) Identical
- b) Genetically Diverse
- c) Haploid
- d) Diploid

Answer Key

Long Answer Questions - Expected Responses

1. Explain the process of photosynthesis and its significance in the ecosystem.

Expected Answer: The process of photosynthesis converts light energy into chemical energy in the form of glucose, storing it for later use by the plant.

2. Describe the process of cellular respiration and its role in energy production.

Expected Answer: Cellular respiration breaks down glucose to release energy in the form of ATP, powering cellular functions.

3. Explain the theory of natural selection and provide examples of adaptation in different organisms.

Expected Answer: Natural selection favors traits that enhance survival and reproduction, leading to adaptation over time.

4. Describe the process of DNA replication and its importance in cell division and inheritance.

Expected Answer: DNA replication is the process of creating an exact copy of DNA, ensuring accurate transmission of genetic information.

5. Explain the process of mitosis and its significance in growth and repair of tissues.

Expected Answer: Mitosis is a type of cell division that produces two identical daughter cells from a single parent cell.

6. Describe the process of meiosis and its importance in sexual reproduction and genetic variation.

Expected Answer: Meiosis is a type of cell division that produces four genetically diverse haploid gametes from a single diploid cell.

7. Explain the function of enzymes and how their structure relates to their catalytic activity.

Expected Answer: Enzymes are biological catalysts that speed up biochemical reactions without being consumed.

8. Explain the relationship between photosynthesis and cellular respiration.

Expected Answer: Photosynthesis and cellular respiration are interconnected processes. Photosynthesis produces glucose used in cellular respiration, which releases energy needed for photosynthesis.

Multiple Choice Questions – Correct Answers

1. Which of the following is the primary product of photosynthesis?

Correct Answer: Glucose

2. Where does cellular respiration primarily occur in eukaryotic cells?

Correct Answer: Mitochondria

3. Which type of cell division is responsible for the production of gametes?

Correct Answer: Meiosis

4. Which mechanism is the driving force behind adaptation and evolution?

Correct Answer: Natural Selection

5. What type of biological molecule acts as a catalyst to speed up biochemical reactions?

Correct Answer: Enzymes

6. Which molecule serves as the primary energy currency of cells?

Correct Answer: ATP

7. Which process generates ATP by breaking down glucose?

Correct Answer: Cellular Respiration

8. The gametes produced through meiosis are genetically _____.

Correct Answer: Genetically Diverse