



Practice Worksheet on Molecular Biology and Genetics

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Subject: Biology

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Long Answer Questions

1. Explain the process of gene expression in eukaryotic cells.
2. Describe the role of enzymes in biological systems.
3. Explain the process of photosynthesis, including the light-dependent and light-independent reactions.
4. Describe the process of cellular respiration, including glycolysis, the Krebs cycle, and the electron transport chain.
5. Explain the process of mitosis and its significance in cell growth and repair.
6. Explain the process of meiosis and its significance in sexual reproduction.

7. Explain the theory of natural selection and its role in evolution.

8. Describe the evidence supporting the theory of evolution.

Multiple Choice Questions

1. What is the basic unit of heredity?

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

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

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

3. What is the primary function of mitochondria in eukaryotic cells?

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

4. What type of cell division produces gametes?

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

5. What is the name of the process where organisms better adapted to their environment are more likely to survive and reproduce?

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

6. What is the process that leads to the formation of mRNA from DNA?

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

7. What process converts mRNA into a polypeptide chain?

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

8. Which of the following is NOT a component of a nucleotide?

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

Answer Key

Long Answer Questions - Expected Responses

1. Explain the process of gene expression in eukaryotic cells.

Expected Answer: The process involves several steps including DNA replication, transcription, translation and protein folding.

2. Describe the role of enzymes in biological systems.

Expected Answer: Enzymes are biological catalysts that speed up chemical reactions in living organisms by lowering the activation energy.

3. Explain the process of photosynthesis, including the light-dependent and light-independent reactions.

Expected Answer: Photosynthesis is the process by which plants convert light energy into chemical energy in the form of glucose.

4. Describe the process of cellular respiration, including glycolysis, the Krebs cycle, and the electron transport chain.

Expected Answer: Cellular respiration is a metabolic process that releases energy from glucose, producing ATP for cellular activities.

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

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

6. Explain the process of meiosis and its significance in sexual reproduction.

Expected Answer: Meiosis is a type of cell division that produces four haploid gametes from a single diploid cell, leading to genetic variation.

7. Explain the theory of natural selection and its role in evolution.

Expected Answer: Natural selection is a process where organisms better adapted to their environment are more likely to survive and reproduce.

8. Describe the evidence supporting the theory of evolution.

Expected Answer: Evolution is the process of gradual change in the heritable characteristics of biological populations over successive generations.

Multiple Choice Questions – Correct Answers

1. What is the basic unit of heredity?

Correct Answer: B

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

Correct Answer: C

3. What is the primary function of mitochondria in eukaryotic cells?

Correct Answer: A

4. What type of cell division produces gametes?

Correct Answer: D

5. What is the name of the process where organisms better adapted to their environment are more likely to survive and reproduce?

Correct Answer: B

6. What is the process that leads to the formation of mRNA from DNA?

Correct Answer: C

7. What process converts mRNA into a polypeptide chain?

Correct Answer: D

8. Which of the following is NOT a component of a nucleotide?

Correct Answer: A