



# Practice Worksheet on Cellular Processes

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

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Subject: Biology

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## Long Answer Questions

1. Explain the role of mitochondria in a eukaryotic cell.
2. Describe the function of enzymes in biological reactions.
3. Design an experiment to investigate the impact of light intensity on the rate of photosynthesis, mentioning necessary controls.
4. Identify and justify two variables to control when testing the effect of light intensity on the rate of photosynthesis.
5. Analyze the relationship between temperature and enzyme activity, explaining the observed trend.
6. Evaluate the reliability of an experiment assessing the effect of temperature on enzyme activity.

7. Explain cellular respiration and its importance in energy production within cells.

8. Describe the process of photosynthesis, highlighting its role in energy production and oxygen release.

## Multiple Choice Questions

1. What is the primary function of mitochondria in a cell?

- a) They produce proteins.
- b) They produce energy.
- c) They store water.
- d) They control cell division.

2. How do enzymes affect the rate of biological reactions?

- a) Slow down
- b) Speed up
- c) Stop
- d) Reverse

3. Which factor directly affects the rate of photosynthesis in an experiment designed to measure this rate?

- a) Water pressure
- b) Light intensity
- c) Carbon dioxide concentration
- d) Oxygen concentration

4. What variable is crucial to control while examining the effect of light intensity on the rate of photosynthesis?

- a) Temperature

- b) Light color
- c) Humidity
- d) pH

5. How does enzyme activity typically respond to changes in temperature?

- a) It remains constant
- b) It increases steadily
- c) It increases then decreases
- d) It decreases then increases

6. What factors influence the reliability of data collected during experiments concerning enzyme activity?

- a) Sample size and repeated trials
- b) Type of container used
- c) Color of the equipment
- d) Presence of observers

7. What is the role of ATP in cells?

- a) Building blocks of proteins
- b) Energy currency of cells
- c) Storage of genetic information
- d) Structural component of cell membranes

8. Where does the oxygen produced during photosynthesis originate from?

- a) Only from animals
- b) From plants and some bacteria
- c) Only in the presence of sunlight
- d) Only in the presence of oxygen

# Answer Key

## Long Answer Questions - Expected Responses

1. Explain the role of mitochondria in a eukaryotic cell.

Expected Answer: Mitochondria generate energy through cellular respiration.

2. Describe the function of enzymes in biological reactions.

Expected Answer: Enzymes are proteins that accelerate biochemical reactions by lowering activation energy.

3. Design an experiment to investigate the impact of light intensity on the rate of photosynthesis, mentioning necessary controls.

Expected Answer: The experiment should control light intensity while keeping factors like temperature, plant type, and water volume consistent to measure the rate of photosynthesis accurately.

4. Identify and justify two variables to control when testing the effect of light intensity on the rate of photosynthesis.

Expected Answer: Two controlled variables are temperature and plant type; maintaining consistent temperature prevents temperature-related variations in reaction rates, and using a single plant species eliminates variations due to differing photosynthetic rates across species.

5. Analyze the relationship between temperature and enzyme activity, explaining the observed trend.

Expected Answer: Enzyme activity typically increases with temperature until an optimal temperature is reached, after which the enzyme denatures, causing activity to decline.

6. Evaluate the reliability of an experiment assessing the effect of temperature on

enzyme activity.

Expected Answer: The data's reliability depends on sample size, the number of repetitions, and whether controls were used. A larger sample size and multiple trials enhance the reliability, indicating a typical trend of enzyme behavior with temperature.

7. Explain cellular respiration and its importance in energy production within cells.

Expected Answer: Cellular respiration is the process where cells break down glucose to generate ATP, the cell's main energy currency.

8. Describe the process of photosynthesis, highlighting its role in energy production and oxygen release.

Expected Answer: Photosynthesis uses sunlight to convert carbon dioxide and water into glucose and oxygen, providing energy for plants and oxygen for the environment.

## Multiple Choice Questions – Correct Answers

1. What is the primary function of mitochondria in a cell?

Correct Answer: They produce energy.

2. How do enzymes affect the rate of biological reactions?

Correct Answer: Speed up

3. Which factor directly affects the rate of photosynthesis in an experiment designed to measure this rate?

Correct Answer: Light intensity

4. What variable is crucial to control while examining the effect of light intensity on the rate of photosynthesis?

Correct Answer: Temperature

5. How does enzyme activity typically respond to changes in temperature?

Correct Answer: It increases then decreases

6. What factors influence the reliability of data collected during experiments concerning enzyme activity?

Correct Answer: Sample size and repeated trials

7. What is the role of ATP in cells?

Correct Answer: Energy currency of cells

8. Where does the oxygen produced during photosynthesis originate from?

Correct Answer: From plants and some bacteria