Comprehension Questions - Module 1: Biology: The Study of Life

Understanding Life Characteristics

1. Explain how each of the six characteristics of life applies to a specific organism of your choice.
2. Describe the relationship between organization and complexity in biological systems.
3. How do living organisms maintain homeostasis when faced with environmental changes?

Biological Organization

1. Compare and contrast the different levels of biological organization, from atoms to the biosphere.
2. How does the structure at one level of organization relate to function at the next level?
3. Give an example of how studying biology at different organizational levels provides different insights.

Energy and Life

1. Explain the role of energy in biological processes and give examples of energy transformations in living systems.
2. How do autotrophs and heterotrophs differ in their energy acquisition strategies?
3. Describe the relationship between energy flow and nutrient cycling in ecosystems.

Classification and Diversity

1. Explain the hierarchical system of biological classification and why it is useful.
2. How does binomial nomenclature help scientists communicate about organisms?
3. Compare and contrast the three domains of life and their key characteristics.

Scientific Process

1. Outline the steps of the scientific method and explain how each step contributes to scientific understanding.
2. What is the difference between a hypothesis, a theory, and a law in science?
3. How do scientists use controlled experiments to test hypotheses?
4. Explain the importance of peer review in the scientific process.