Module 01: Exploring Life Science — Study Questions

1. What are the seven characteristics shared by all living organisms?
2. How would you determine whether a growing crystal is living or non-living?
3. Why is maintaining homeostasis essential for an organism's survival?
4. How does a plant seedling demonstrate the characteristic of "response to stimuli"?
5. What is the difference between a hypothesis and a scientific theory?
6. In an experiment testing whether fertilizer helps plants grow taller, identify the independent variable and dependent variable.
7. Why is a control group important in scientific experiments?
8. A scientist notices mice in one cage are more active than mice in another cage. Propose two hypotheses that could explain this observation.
9. List the levels of biological organization in order from atom to biosphere.
10. At which level of organization would you study the heart, lungs, and blood vessels working together?
11. How does a single cell differ from a tissue?
12. Give an example of an ecosystem and identify its biotic and abiotic components.
13. In your own words, explain what natural selection means.
14. How might a population of insects develop resistance to a pesticide over several generations?
15. Why is genetic variation important for a population's ability to adapt?

16. How do the concepts of structure and function relate in biology? Give a specific example.

17. How does energy flow through living systems differ from the cycling of matter?

18. A new organism is discovered near a deep-sea thermal vent. What characteristics would you look for to confirm it is alive?