Name _____ Class _____ Date _____

SECTION 1-1 REVIEW

THE WORLD OF BIOLOGY

VOCABULARY REVIEW Define the following terms.

1. development _____

_____

2. reproduction _____

_____

3. organ _____

_____

4. tissue _____

_____

MULTIPLE CHOICE Write the correct letter in the blank.

_____ **1.** Biology is the study of

a. animals.
b. plants and animals.
c. all living things.
d. energy transfer.

_____ **2.** A short segment of DNA that contains instructions for the development of a single trait of an organism is known as a

a. DNA loop. **b.** gene. **c.** library. **d.** membrane.

_____ **3.** As the cells in a multicellular organism multiply, they become specialized for different functions in a process called

a. sexual reproduction.
b. descent with modification.
c. photosynthesis.
d. cell differentiation.

_____ **4.** Homeostasis refers to the

a. organization of cellular structures.
b. stable level of internal conditions in organisms.
c. organized structure of crystals.
d. destruction of tropical rain forests.

_____ **5.** Photosynthesis is part of a plant's

a. metabolism.
b. homeostasis.
c. development.
d. response to stimuli.

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SHORT ANSWER Answer the questions in the space provided.

1. Explain why the cell is called the basic unit of life. _____

2. Give a specific example of homeostasis. _____

3. Why is it important to study biology? _____

4. Contrast the reproduction of bacteria with that of frogs. _____

5. **Critical Thinking** The organization of a rock is much simpler than that of living things.

   By what other criteria can a rock be distinguished from living things? _____

STRUCTURES AND FUNCTIONS Explain how the drawing below illustrates the characteristics of life.

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SECTION 1-2 REVIEW

THEMES IN BIOLOGY

VOCABULARY REVIEW **Distinguish between the terms in each of the following groups of terms.**

1. domain, kingdom _____

_____

2. diversity of life, unity of life _____

_____

3. adaptations, evolution _____

_____

4. ecosystem, ecology _____

_____

MULTIPLE CHOICE **Write the correct letter in the blank.**

_____ **1.** A "tree of life" explains

a. how organisms are related to each other.
b. how organisms differ from each other.
c. the lineages of various organisms.
d. All of the above

_____ **2.** Which of the following is NOT an important unifying theme in biology?

a. the diversity and unity of life
b. the relationship between organisms and society
c. the interdependence of living organisms
d. the evolution of life

_____ **3.** An example of a domain is

a. Animalia. **b.** Protista. **c.** Fungi. **d.** Eukarya.

_____ **4.** A trait that improves an individual's ability to survive and reproduce is a(n)

a. mutation. **b.** natural selection **c.** adaptation. **d.** domain.

_____ **5.** Which of the following statements is *true*?

a. Destruction of rain forests has no effect on living things.
b. Destruction of rain forests increases the rate of evolution of rainforest organisms.
c. Humans have had no impact on the world's environment.
d. Humans have had a large impact on the world's environment.

Name _____ Class _____ Date _____

SHORT ANSWER Answer the questions in the space provided.

1. Give an example of how two organisms are interdependent. _____

2. Why must an adaptation be inheritable if it is to cause a population to evolve? _____

3. What is natural selection? _____

4. If two organisms share the same kingdom, must they also share the same domain? Explain.

5. **Critical Thinking** A female frog has a genetic trait that prevents it from producing eggs. How likely is it that this trait will spread through the frog population? Explain your answer.

STRUCTURES AND FUNCTIONS Briefly describe the interactions among the panther, the deer, and the grass in the drawing below.

Name _____ Class _____ Date _____

SECTION 1-3 REVIEW

THE STUDY OF BIOLOGY

VOCABULARY REVIEW Define the following terms.

1. prediction _____

_____

2. control group _____

_____

3. dependent variable _____

_____

4. independent variable _____

_____

5. theory _____

_____

MULTIPLE CHOICE Write the correct letter in the blank.

_____ **1.** A field biologist who studies the behavior of birds in a rain forest most likely collects data through

a. experimenting. **b.** modeling. **c.** observing. **d.** inferring.

_____ **2.** Constructing a graph is an example of

a. measuring. **b.** organizing data. **c.** observing. **d.** predicting.

_____ **3.** Of the following steps in a scientific investigation, the last to be done is usually

a. experimenting.
b. observing.
c. producing a model.
d. hypothesizing.

_____ **4.** A statement that explains observations and can be tested is called

a. a hypothesis. **b.** an inference. **c.** a theory. **d.** a model.

_____ **5.** A visual, verbal, or mathematical explanation that is supported by data is called

a. a hypothesis. **b.** an inference. **c.** a theory. **d.** a model.

Name _____ Class _____ Date _____

SHORT ANSWER Answer the questions in the space provided.

1. What are quantitative data? Give two examples of quantitative data. _____

2. What is an advantage of a peer review of a scientific paper? _____

3. How are a hypothesis, a prediction, and an experiment related? _____

4. What are some of the things scientists might do to analyze data? _____

5. **Critical Thinking** A scientist wanted to study the effect of a drug on the blood pressure of rats. She set up an experiment in which the experimental group consisted of rats that were injected with a salt solution containing the drug. What should the control group have consisted of?

   What were the dependent and independent variables in her experiment? _____

STRUCTURES AND FUNCTIONS Examine the drawing of the owl. In each space below, provide an observation that would support the inference given or provide an inference that could be derived from the observation given.

Observations	Inferences
_____	Owls live in trees.
_____	Owls feed on mice.
_____	Owls kill prey with their talons.
The owl has wings.	_____
Both of the owl's eyes face forward.	_____
It is night.	_____

Name _____ Class _____ Date _____

SECTION 1-4 REVIEW

TOOLS AND TECHNIQUES

VOCABULARY REVIEW **Circle the term that does not belong in each of the following groups, and briefly explain why it does not belong.**

1. compound light, transmission electron, light electron, scanning electron _____

_____

2. base unit, stage, nosepiece, objective lens _____

_____

3. magnification, power of magnification, resolution, mass density _____

_____

4. second, minute, meter, kilogram _____

_____

5. meter, square meter, cubic meter, kilogram per cubic meter _____

_____

MULTIPLE CHOICE **Write the correct letter in the blank.**

_____ **1.** The ability of a microscope to show details clearly is called

a. enlargement. **b.** magnification. **c.** reduction. **d.** resolution.

_____ **2.** One limitation of the scanning electron microscope is that it cannot be used to

a. examine specimens smaller than cells.
b. view living specimens.
c. produce an enlarged image of a specimen.
d. produce an image of the surface of a specimen.

_____ **3.** A microscope with a 10× ocular lens and a 25× objective lens has a total power of magnification equal to

a. 2.5×. **b.** 35×. **c.** 250×. **d.** 2,500×.

_____ **4.** The SI base unit for time is the

a. second. **b.** minute. **c.** hour. **d.** day.

_____ **5.** The SI prefix that represents 1,000 times the base unit is

a. deci. **b.** centi. **c.** kilo. **d.** micro.

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SHORT ANSWER Answer the questions in the space provided.

1. Arrange the following parts in the order that matches the light path through a light microscope: specimen, ocular lens, objective lens, light source. _____

2. What are the maximum magnifications of the LM, TEM, and SEM? _____

3. Write the abbreviation for each of the following units: meter, kilometer, centimeter, millimeter, micrometer. What is the mathematical relationship between these units? _____

4. **Critical Thinking** A group of scientists want to determine whether the bacteria they are studying have viruses inside them. Which type of microscope should they use? Explain your answer.

STRUCTURES AND FUNCTIONS Label each part of the figure in the spaces provided.