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**Biology Semester 1 Final REVIEW—Write answers on your own paper and attach this to the front.**

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**Chapter 1**

1. What are the goals of science?
2. What is data?
3. Define hypothesis, theory, law, and controlled experiment.
4. What is the first step when setting up an experiment?
5. What is a constant in an experiment?
6. What is an independent variable? Dependent variable?
7. Biology is the study of what?
8. List the eight characteristics of life.

**Chapter 2**

9. What three particles make up an atom and what are their charges?
10. Which of the above are located in the nucleus?
11. What atoms make up a molecule of water?
12. What happens to water as it freezes?
13. What are ionic bonds? Covalent bonds?
14. Define pH, acid, and base.
15. On the pH scale what is the range for an acid? A base? What is neutral?
16. What are the monomers or building blocks for lipids, carbohydrates, proteins, and nucleic acids?
17. What are the main functions of each of the macromolecules: lipids, carbohydrates, proteins, and nucleic acids?
18. How do enzymes affect reactions?
19. Put the following bonds in order from weakest to strongest: ionic, hydrogen, covalent.

**Chapter 3**

20. What is ecology?
21. Define species, populations, and communities.
22. Put the following in order from lowest level of organization: biome, ecosystem, population, species, community, biosphere.
23. Define producers and consumers and give an example of each.
24. What is the original source of energy in most ecosystems?
25. Compare and contrast autotrophs and heterotrophs and give an example of each.
26. What are decomposers?
27. What is the difference between a food web and a food chain?
28. How much energy can be passed from one trophic level to the next? Where does the remaining energy go?
29. What types of matter are recycled in the biosphere?
30. List ways that carbon cycles through the atmosphere.
31. Why do organisms need nutrients?

**Chapter 4**

32. How do weather and climate differ?
33. Define biotic and abiotic factors and give examples of each.
34. How can competition be reduced between different species sharing the same habitat?
35. Name the three types of symbiotic relationships and give an example of each.
36. What is ecological succession?
37. How do primary succession and secondary succession differ?
38. What factors identify a biome?

**Chapter 5**

39. What are limiting factors and give examples.

40. Define populations and carrying capacity.
41. What may happen when a population reaches carrying capacity?
42. What are density-dependent limiting factors? What types of populations do they affect?
43. What are density-independent limiting factors? What types of populations do they affect?

#### Chapter 6

44. What is biodiversity? List **several** threats to biodiversity.
45. Why is biodiversity so important?
46. Why do temperatures on earth remain within a suitable range?
47. What are some possible effects of overexposure to UV radiation?
48. What are some effects of an increase in CFC's?

#### Chapter 7

49. Who first identified cork cells?
50. What are the three parts of the cell theory? What types of organisms does the cell theory apply to?
51. Compare and contrast prokaryotes vs. eukaryotes and give examples of each.
52. What is the main difference between prokaryotes and eukaryotes?
53. Give the function of the following organelles: nucleus, ribosomes, mitochondria, cell wall, cell membrane.
54. The cell membrane is made up of phospholipids with a \_\_\_\_\_ head and \_\_\_\_\_ tails.
55. What type of cell would you assume has large amounts of mitochondria?
56. What is diffusion?
57. Which type of diffusion involves the movement of water across a selectively permeable membrane?
58. What type of transport requires the input of energy for the cell?
59. What is cell specialization?
60. Give three examples of organs.
61. Put the following in order from simplest to most complex: cell, organ system, organ, tissue.
62. Define solution, solvent, and solute. If you have salt water, what is the solution? The solvent? The solute?
63. Why would scientists make media to grow cells with a salt concentration that is equal to the cell?
64. What process do cells use to take in large particles?
65. Why will an animal cell burst when surrounded by fresh water?

#### Chapter 8

66. What are the three parts of an ATP molecule?
67. How is energy released from ATP?
68. A principal chemical compound that living things used to store energy is called what?
69. What is the gas given off from photosynthesis?
70. What is the light-absorbing molecule that plants use to gather the sun's energy?
71. Why do most plants appear green?
72. What is another name for the light-independent reactions?
73. Where does photosynthesis take place?

#### Chapter 9

74. Put the following events for cellular respiration in order: Krebs cycle, glycolysis, and electron transport.
75. What is the equation for cellular respiration?
76. What is fermentation? What are the two types of fermentation? Give an example of each type.
77. Where does lactic acid formation occur?
78. Which carbohydrate is broken down in cellular respiration and produced in photosynthesis?
79. Why is cellular respiration called an AEROBIC process?
80. How are photosynthesis and cellular respiration complementary?
81. Where does cellular respiration occur?