Science 9 Review

1. Differentiate between manipulated, responding, and controlled variables.

2. What is the relationship between observations, hypotheses, theories, and laws?

Biological Diversity

Topic 1

1. What is an ecosystem?

2. What is biodiversity?

3. What is a species?

4. How does biodiversity within a species affect its chances of survival?

5. What is latitude? What is the relationship between latitude and the amount of biodiversity? Provide specific examples.

6. Compare the amount of biodiversity between insects and mammals.

7. What is taxonomy? Which name is more specific: genus or species?

8. What are adaptations? Differentiate between structure (physical) and behavioral adaptations. Provide examples of each.

Topic 2

1. What is a niche? Geese migrate south during the winter, what are other characteristics of their niche?

2. Differentiate between broad and narrow niches. Provide advantages and disadvantages of each niche.

3. What is the classification of an organism that lives in a broad niche? Narrow niche? What is the trap of specialization?

4. Provide an example of a predator-prey relationship. How does the number of predators affect the number of prey, etc?

5. Differentiate between the three types of symbiosis that we studied in class. Provide two examples of each.

Topic 3

1. Differentiate between sexual and asexual reproduction. List the advantages and disadvantages of each.

2. Identify four forms of asexual reproduction and one example of an organism that performs each.

3. Do plants perform sexual or asexual reduction? Differentiate between self-pollination and cross-pollination.

4. Draw the life cycle of humans. Your picture must include the following words: adult, embryo, zygote, gamete, and the following processes: meiosis, mitosis, and fertilization. Feel free to identify the chromosome number in each step.

Topic 4

1. Differentiate between heritable and non-heritable traits. Provide examples of each.

2. Differentiate between continuous and discrete (non-continuous) traits. Provide examples of each.

3. What is meant by the phrase nature vs. nurture? Provide examples of traits that can be affected by the environment and examples that cannot be affected by the environment.

4. Differentiate between dominant and recessive traits, pure-breed vs. hybrid individuals, and draw Punnett Squares to demonstrate your understanding.

5. Explain how two unaffected parents can produce an affected child.

6. Explain what mutations and mutagens are. Provide an example of each.

7. Using pesticide-resistance as an example, explain how mutations can be positive.

Topic 5

1. Differentiate between chromosomes and genes.

2. Compare the chromosome number in somatic cells, gametes, and zygotes.

3. Explain the function and structure of DNA.

4. Differentiate between meiosis and mitosis. Explain how the amount of DNA found in the products of meiosis and mitosis can differ.

5. Identify which type of cell division is altered when a child is born with 45 of 47 chromosomes.

6. What is biotechnology (genetic engineering)? Provide several examples.

Topic 6

1. Differentiate artificial and natural selection. Provide examples of each.

2. What is another name of artificial selection?

3. Both pesticide and antibiotic resistance are examples of natural selection. Explain how this resistance developed and how the amount of resistance is affected by time.

Topic 7

1. Differentiate between extinction and extirpation. Provide examples of each.

2. Provide three natural and three man made causes of extinction or extirpation.

Topic 8

1. Differentiate between and provide examples of the following conservation strategies: seed banks, captive breeding programs, protected areas, and international treaties.