*Science 1206 – Midterm Study Guide*

Unit 1- Ecology

Science 1206 – Unit 1 Review – ***Revised for Midterm Exam***

***Key Words:***

Paradigm Paradigm shift Sustainability Ecology

Ecosystem Abiotic Factor Biotic Factor Primary Succession

Secondary Succession Pioneer Species Climax Community Food Chain

Food Web Producer Consumer Autotroph

Heterotroph Herbivore Carnivore Omnivore

Decomposer Detritus Primary Consumer Secondary Consumer

Tertiary Consumer Top Carnivore Trophic Level Pyramid of Numbers

Pyramid of Biomass Pyramid of Energy Habitat

Competition

Invasive Species Introduced Species Carbon Cycle Global Warming

Photosynthesis Cellular respiration Nitrogen Cycle Nitrogen Fixing Bacteria

Denitrifying Bacteria Eutrophication Bioaccumulation DDT

Pesticide Water table Tundra Grasslands

Boreal Forest Temperate Deciduous Forest Biome

Questions for Practice:

1. What is a paradigm? Give an example of a paradigm and a paradigm shift.
2. Give an example of a sustainable practice and a practice that is unsustainable.
3. Create a list of 5 abiotic factors and 5 biotic factors that might affect a lake ecosystem.
4. Explain the process of Primary Succession. Be sure to include the terms pioneer species and climax community.
5. Create a food chain and a food web for the local ecosystem. Include at least 15 species, and label each species as a producer, herbivore, carnivore, omnivore or decomposer.
6. Create a pyramid of biomass, numbers and energy for the following situations:
   1. Grass is eaten by grasshoppers, which are eaten by blue ays, which are eaten by cats.
   2. A tree is home to termites which feed on it, and the termites are eaten by a bird.
7. Label each trophic level in your food pyramids as producers, primary consumers, secondary consumers, tertiary consumers. Also label the top carnivore.
8. Where are three examples of carbon stores in the carbon cycle?
9. Why are cellular respiration and photosynthesis considered complimentary processes?
10. What are some of the effects of global warming?
11. Why can’t plants use nitrogen from the air?
12. Give two reasons why soil might lack usable nitrogen?
13. Describe the process of eutrophication.
14. What are three sources of nitrates that can cause eutrophication?
15. Why are pesticide levels typically higher in top carnivores than species lower on the food chain?
16. Draw a diagram showing the process of bioaccumulation.
17. Why do some people consider soil to be a non-renewable resource?
18. List 4 ways that humans impact the soil.
19. Create a table for each of the four major Canadian biomes. For each biome, create a column for
    1. Climate b. Types of plants found c. type of animals found d. Soil quality
20. Create a list of 5 pros and 5 cons of developing the Lower Churchill Hydro Project. Write a paragraph stating whether you are in favour or opposed to the project and say why you feel this way.

Once you finish the questions, rate how well you think you know the material using the following table.

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Unit 2 – Chemistry

Key Terms:

WHMIS MSDS Aqueous Electrolyte

Non-electrolyte Ionic Compound Molecular Compound Proton

Neutron Electron Nucleus Cation

Anion Simple Ion Polyatomic Ion Diatomic Molecule

Practice Questions:

1. Draw out the 8 WHMIS symbols and identify what they mean
2. List 5 things you would expect to see on an MSDS
3. Make a list of 8 lab safety rules.
4. Are you allowed to bring the following into the lab (yes/no)?
   1. Books
   2. Make-up
   3. Water Bottles
   4. Contact Lens
   5. Gum
   6. Food
   7. Open-toed Shoes
5. List the 7 elements that exist as diatomic molecules.
6. For each element, write down the number of protons, neutrons and electron it has.
   1. Mg
   2. C
   3. N
   4. Ag
   5. S
7. Draw an energy level diagram for the following pairs of atoms and their ions. Also, state how many electrons each ion has lost or gained.
   1. Na and Na+
   2. Al and Al3+
   3. N and N3-
   4. O and O2-
   5. Ca and Ca2+
8. How can you tell if a compound is molecular or ionic by looking at its formula?
9. For each of the following write down the empirical formula:
   1. P4H10
   2. C2H6
   3. SF2
   4. P2Cl5
   5. N2O4
   6. C6H12O6
10. Write down 5 possible molecular formulas for the following empirical formulas:
    1. CH2
    2. S3F5
11. Complete the following table:

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| Formula | Ionic or Molecular (I or M) | Name |
| P3S5 |  |  |
| LiF |  |  |
| CaCO3®6H2O |  |  |
| KNO3 |  |  |
| SO2 |  |  |
| N3O3 |  |  |

1. Write the formula for the following molecular compounds:
   1. TetraSulfur Nonachloride
   2. Nitrogen TriBromide
   3. Carbon Monoxide
   4. Octaphosphorous Decahydride
2. Write the formulas for the following ionic compounds
   1. Magnesium Fluoride
   2. Potassium Oxide
   3. Calcium Oxide
   4. Mercury(I)Iodide
   5. Mercury (II) Iodide
   6. Sodium Chlorate
3. More practice with naming ionic compounds (#13 continued)
   1. Iron(II) Nitrate
   2. Copper(I) Phosphate
   3. Berylium Sulfate
   4. Sodium Acetate
   5. Sodium Sulfide Dihydrate
   6. Magnesium Chloride Monohydrate
   7. Radium Nitrite Heptahydrate
   8. Calcium Chlorate
4. Make a T chart comparing the similarities of Acids and Bases
5. Name the following acids:
   1. HBr
   2. HCN
   3. HCH3COO
   4. HClO2
   5. HClO3
   6. HClO4
   7. HCl

Once you try all the questions, fill in the table to rate yourself on each question.

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