**CHAPTER 2: STUDY GUIDE**

**ENERGY FLOW AND NUTRIENT CYCLES SUPPORT LIFE IN ECOSYSTEMS**

**Steps for studying for the Ch. 2 Test:**

1. Re-read pages 54 – 105 of your textbook.
2. Be able to define the key vocabulary from the chapter.
3. Review your Reading Checks, making sure all is complete.
4. Be able to answer the questions below. They are a guide for your studying.
5. **Complete the online quizzes at** <http://www.bcscience10.com/>

**VOCAB: Be able to define the following terms. Make VOCAB cards if you need to.**

* **abiotic**
* **acid precipitation/rain**
* **algae**
* **bacteria**
* **biodegradation**
* **biodiversity**
* **biomagnification**
* **biotic**
* **carbon exchange**
* **carbon sink**
* **carbon store**
* **carbonate**
* **carnivore**
* **cellular respiration**
* **commensalism**
* **consumer**
* **primary consumer**
* **secondary consumer**
* **tertiary consumer**
* **decomposers**
* **denitrification**
* **detivores**
* **ecological pyramid**
* **pyramid of biomass**
* **pyramid of energy**
* **pyramid of numbers**
* **food chains**
* **food pyramids**
* **food webs**
* **fossil fuel**
* **herbivore**
* **legumes**
* **lightning**
* **mutualism**
* **nitrification**
* **nitrogen fixation**
* **nutrients**
* **omnivore**
* **parasitism**
* **phosphorus**
* **photosynthesis**
* **phytoplankton**
* **producer**
* **top consumer**
* **top predator**
* **top carnivore**
* **trophic levels**

**2.1 Energy Flow in Ecosytems Questions**

1. What is biomass and what units are used to express it?
2. What is energy flow? How are you apart of it?
3. In what form do producers produce and store food? What is the process called in which they do this?
4. How do consumers obtain their energy?
5. Define decomposition. What is the difference between decomposition and biodegradation? Use examples.
6. Illustrate the difference between food chains, food webs and food pyramids.
7. Contrast decomposers and detrivores.
8. Compare and contrast detrivores, herbivores, carnivores and omnivores.
9. Compare and contrast the 3 types of ecological pyramids (see page 66). Which one can be inverted?

**2.2 Nutrient Cycles in Ecosystems**

1. Give some examples of nutrients.
2. What are the 3 nutrient stores/sinks in the biosphere that are essential for life?
3. List some biotic and abiotic processes that cause nutrients to flow in and out of stores.
4. List human activities have affected nutrient cycles. Explain how human activities affect nutrient cycles and why this is a problem.
5. List 5 chemical nutrients that are limit the life in an ecosystem.
6. Complete the following table for each of the nutrient cycles learned in class:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Nutrient Cycle | Why it is important? | How it is stored? | How it is cycled? | Human activities |
| Carbon |  |  |  |  |
| Nitrogen |  |  |  |  |
| Phosphorus |  |  |  |  |

1. Study and understand each of the nutrient cycle data sheets; carbon, nitrogen and phosphorus.
2. Make sure you have completed the Nitrogen Cycle Matching worksheet.
3. Write the balanced equation for photosynthesis and cellular respiration and understand what they mean. How do they relate to each other?

**2.3 Effects of Bioaccumulation on Ecosystems Questions**

1. Differentiate pesticides, insecticides and herbicides.
2. Compare and contrast bioaccumulation and biomagnifications.
3. Complete the following table for each of the following synthetic chemicals that bioaccumulate in ecosystems.

|  |  |  |
| --- | --- | --- |
| Chemical | What is it and where does it come from? | Why is it a problem? |
| PCBs |  |  |
| POPs  Ex. DDT |  |  |

1. Complete the following table for each of the following heavy metals that bioaccumulate in ecosystems.

|  |  |  |  |
| --- | --- | --- | --- |
| Heavy metal | Environmental Source | Effects on Organisms | Effects on Humans |
| Lead |  |  |  |
| Cadmium |  |  |  |
| Mercury |  |  |  |

1. Describe 3 ways in which scientists are working to solve problems of bioaccumulation in ecosystems.

**Work book and Text Book Questions**: Complete all workbook pages for Ch. 2 and complete the section and chapter review from the textbook.

**Practice Provincial Exam:** Visit the BC Science 10 website at <http://www.bcscience10.com/> and complete the sections quizzes and applicable questions from the practice provincial exams.