

Unit C Review – Environmental Chemistry

Topic 1

1. Differentiate between organic and inorganic substances and classify each of the following:
 - a. K
 - b. Peanut Oil
 - c. Apple Juice
 - d. NaCl
 - e. Mg
 - f. Sugar
2. Explain the role and sources of the following organic substances:
 - a. Carbohydrates
 - b. Lipids
 - c. Proteins
3. Differentiate between trace elements and macronutrients.
4. What are the components/ingredients found in fertilizer?
5. Identify the reactants and products of photosynthesis. Which organic product is used to make sucrose ($C_{12}H_{22}O_{11}$)?

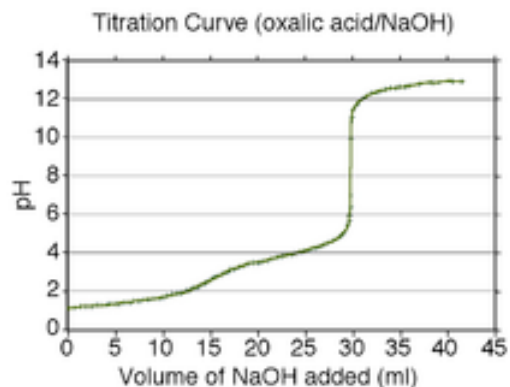
Topic 2

1. What is biomagnification (bioaccumulation)? Explain the relationship between the concentration of the toxin (ppb or ppm etc.) and level of an organism in the food chain.
2. How do insects become resistant to pesticides? How does this relationship change with time?

Topic 3

1. Differentiate between acids and bases based upon pH range, litmus paper colour and taste. What happens to the acidity of a solution as the pH value decreases?
2. Write the general equation for a neutralization reaction. What pH value is considered to be neutral?
3. What would you use to neutralize/clean up an acid spill? A base spill?

4. Based on the following graph, determine the amount of NaOH required to neutralize the oxalic acid:

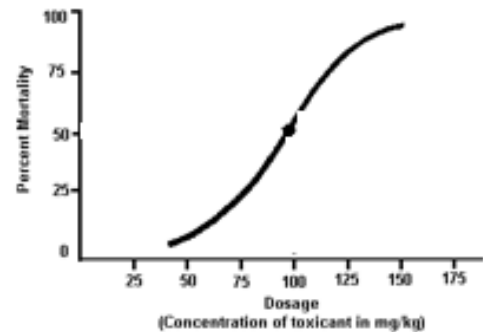


5. What is acid rain? Which type of oxides are the main contributors to acid rain?
6. Describe the effects of acid rain on the environment.
7. What is liming? Why is it used?
8. What are scrubbers? What do they remove? How do they affect the levels of acid rain?
9. Compare and contrast dispersion with dilution.

Topic 4

1. How many mL of toxin must be added to 1 000 000 mL of water to produce a 9 ppm solution?
2. Define toxicity.
3. What does LD50 stand for and what does it mean?

4. Determine the LD50 of the following graph:



Topic 5

1. Which specific nutrients are added to a lake or pond when it receives agricultural run-off (fertilizer and manure) or we dump sewage? What is the result of these additional nutrients?
2. *Completion:* Increased nutrients = _____ algae = _____ bacteria = _____
O₂ = _____ trout
3. What is the relationship between temperature and oxygen concentrations?

4. What are bioindicators? What is the relationship between the oxygen concentration and biodiversity? What is the relationship between oxygen concentration and the number and types of invertebrates found in a river?

5. *Completion:* In a river with low biodiversity, you would expect to find _____ acidity, _____ nitrate levels, _____ phosphate levels, and _____ oxygen levels.

Topic 6

1. Differentiate between biodegradable and non-biodegradable.

2. What environmental conditions are required for the optimal decomposition of biodegradable materials?

3. Of the 4 R's, which R has the greatest immediate impact?

4. Describe the characteristics of well-constructed sanitary landfill.

5. Why should we not incinerate our waste?

Science General

1. Differentiate between manipulated, responding, and controlled variables.
2. What is the relationship between observations, hypotheses, theories, and laws?

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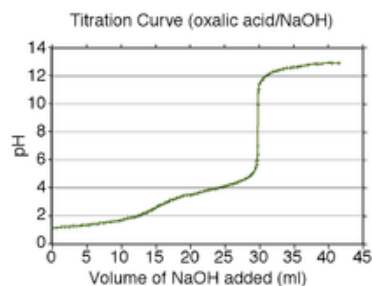
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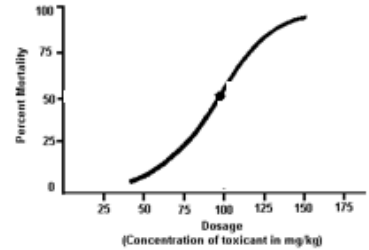
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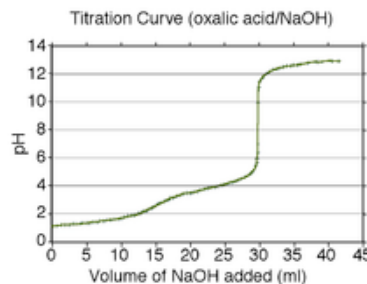
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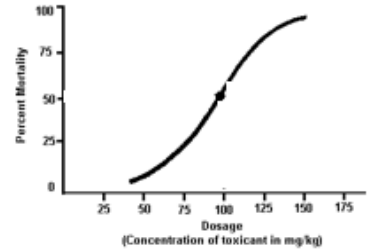
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