

Unit 1 Homework Assignment

C2 - Chemistry

How does the periodic table work? (4:30 min)

1. What are the seven rows called?
2. What are the 18 columns going down called?
3. How are the atoms arranged? Number of what within atom?
4. What do the periods show?
5. What is the electronic configuration for carbon?
6. What determines chemical reactions?
7. What do we know about the number of electrons in the outer shell of all atoms in same group?
8. What trends occur across the periods?
9. What trends occur down a group?
10. How do metals form chemical bonds?
11. How do nonmetals form chemical bonds?
12. What happens in group 1 alkali metals as you go down? Why?
13. What happens in group 17 halogens as you move down the group?
14. What happens in group 18 noble gases?

Time-line of the Atomic Models (11 min)

1. Who were the first people to talk about the idea of atoms?
2. How did Democritus describe the endpoint in this mind experiment using bread? Meaning what?
3. What happened in 1808? By who? Main point to his hypothesis?
4. What happened in 1904? By who? Main idea?
5. What happened in 1911? By who? Main idea?
6. What happened in 1913? By who?
7. What happened in 1920? By who?
8. What happened in 1919? By who?
9. What happened in 1932? By who?
10. What model will we use to describe simple chemical reactions occurring in the human body?

Ionic and Covalent Bonding (4:30 min)

1. Why do atoms bond?
2. Why are atoms electrically neutral?
3. When are atoms most stable?
4. What is the octet rule?

5. What happens in an ionic bond?
6. What do ionic bonds form when out of water?
7. When do covalent bonds form? Types of atoms bonding by covalent bonds?
8. What happens to a covalent bond if the size between the two atoms is different?

Ionic vs Covalent vs Polar Covalent Bonds (2:30 min)

1. How is an octet formed in ionic and covalent bonding?
2. What happens to form sodium-florine?
3. Why is hydrogen florine a polar covalent bond?

Hydrogen Bonding (5 min)

1. What is the definition of a hydrogen bond?
2. How are hydrogen bonds different than covalent or ionic bonds?
3. What are the charges across the water molecule? What side is negative?
4. What are some properties of water?

What is the difference between an acid, base, and a salt? (18 min)

1. What house hold good are acids? Acid types and taste?
2. What house hold goods are bases?
3. What are the salts?
4. What is an example of a neutralization reaction? Include names and formula:
5. How do you identify acids?
6. Are all compounds containing hydrogen acids?
7. What are bases?
8. How are salts formed?
9. What are rules to identify salts and bases?
10. What are the solubility of acids and bases?
11. Are all salts soluble in water?

What is an isomer? (5:36 min)

1. What is an isomer?

What are free radicals and antioxidants? (7 min)

1. What may cause free radicals?
2. What happens during ischemia?
3. What happens if oxygen is reintroduced after ischemia?
4. Are free radicals able to tell difference between our cells and bacteria?
5. What are three free radicals?
6. What makes an compound a free radical? How may this be corrected?

7. What occurs during oxidative stress?

What is the difference between hydrophobic and hydrophilic molecule? (2 min)

1. What is the definition for hydro, philic, and phobia?
2. What do hydrophilic molecules do in water? Eg.
3. What do hydrophobic molecules do in water? Eg.
4. What is unique about cell membranes?

What is the difference between mixtures of solutions, colloids, and suspensions? (5:48 min)

1. What is a mixture?
2. What mixture is homogenous?
3. What mixtures are heterogeneous?
4. How are mixtures classified by size, appearance, filtration, and scattering of visible light?

What is a buffer? (6 min)

1. What happens to proteins in our blood if the pH is out of the range of 7.35 and 7.45?
2. What makes something an acid?
3. What resists changes in pH?
4. What is a buffer?
5. What makes a good buffer?

What is the bicarbonate buffering system? (6:30 min)

1. What is pH safe range of blood?
2. If the numbers are lower or higher then what do we call the blood?
3. What happens to the hydrogen ion concentration when you make something more acidic or basic?
4. What is a simple definition of an acid?
5. What is formula for carbonic acid and bicarbonate?
6. What do you make if you combine water with carbon dioxide?
7. Write out the complete bicarbonate buffering system. What side involves the lungs? What side involves the kidneys?
8. How can we increase hydrogen concentration in our blood (to adjust pH)?
9. Why may breathing rate suggest blood pH?

Metabolism: catabolic vs anabolic (1 min)

1. What is metabolism?
2. What is catabolism?
3. What is anabolism?
4. What is a waste product of metabolism?

Carbohydrates (4:30 min)

1. What does the word carbohydrate suggest?
2. What is the building block for the polysaccharide glycogen?
3. What is the of carbohydrates in body?

Lipids (11 min)

1. What is a common term used for lipids? Made up of what?
2. What do all fats have in common?
3. Are all fats hydrophobic?
4. Do steroids look like typical lipids? How differ?
5. How are phospholipids different than triglycerols?
6. How do phospholipids react in water? Why?
7. How do phospholipids arrange themselves in water to form what?

Proteins (6 min)

1. How significant are proteins?
2. What is the building blocks (monomers) of proteins (polymer)?
3. What roles do proteins play in the human body?
4. What is the "R" group? the variable portion of an amino acid?

Nucleotides and nucleic acids (5:55 min)

1. Where did nucleic acids get their name from?
2. What nucleic acids stores our genetic information?
3. What are the building blocks for DNA?
4. What are the three components of a nucleotide?
5. What components make up the backbone of DNA (the sides of the ladder)?
6. What component make up the "steps" between the two sides of the DNA molecule?

Biochemical Pathways (1:35 min)

1. What type of molecules are used to form a biochemical pathway?
2. What is the first molecule to enter a biochemical pathway called? s
3. What is the substrate converted into by the first enzyme? To become what?

Oxidation-Reduction Reactions (13 min)

1. What is a simple definition of a "redox" reaction?
2. What is reduction?
3. What is oxidation?
4. How may the phrase oil rig help you remember how oxidation and reduction works?
5. Explain oxidation and reduction by using sodium chlorine?
6. Write and label chemical equation for sodium chloride? Show oxidation and reduction
7. Can you have oxidation without reduction?

Enzyme Actions (1:45 min)

1. What is the function of sucrase?
2. What is sucrose split into?
3. Why is this process called hydrolysis?
4. Are enzymes used only one time? Explain

Enzymes (1:14 min)

1. What type of molecules form enzymes?
2. What is the function of enzymes?
3. What binds to the reactive site of the enzyme?
4. Are enzymes consumed in the process?

B Vitamins (3:30 min)

1. What is one of the major functions of B vitamins?
2. What are B vitamins role as coenzymes?
3. Will excess B vitamins produce more energy?
4. What will happen to excess B vitamins?