

NAME: \_\_\_\_\_

**AP: CHAPTER 2 & 3 CHEMICAL CONTEXT OF LIFE & WATER**

1. What are the most common elements in the human?

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2. Helium has an atomic number of 2 and atomic mass of 4. Explain.

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3. Define isotope and give some examples.

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4. How are isotopes used in biology?

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5. What happens when electrons change levels?

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6. What is the significance of valence numbers?

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## AP: CHAPTER 4 CARBON & THE MOLECULAR DIVERSITY OF LIFE

1. Define organic chemistry.

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2. What are the major groups of organic compounds studied in biology?

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3. Describe some of the shapes of carbon skeletons.

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4. Define the following:

Isotopes:

Geometric Isotopes:

Enantiomers:

5. Why are enantiomers of biological interest?

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6. What is the significance of functional groups?

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7. For each of the functional groups, complete the chart:

Group	Formula	Comments
Hydroxyl		
Carbonyl		aldehyde
Carbonyl		keytone
Carboxyl		
Amino		
Sulfhydryl		
Phosphate		

## AP: CHAPTER 5A MACROMOLECULES

1. Define the following:

monomer:

polymer:

condensation reaction:

hydrolysis:

2. Which foods do you think will enter the blood the quickest? Why?

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3. What are the general roles of carbohydrates?

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4. List some monosaccharides with their molecular formulas.

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5. Double sugars are called \_\_\_\_\_

List the monosaccharides that form each:

Maltose:

Sucrose:

Lactose:

6. Polymers of sugars form \_\_\_\_\_

7. Which forms of polysaccharide is best for each function:

Strength of structure \_\_\_\_\_

Storage and sugar release \_\_\_\_\_

What theme is this addressing? \_\_\_\_\_

8. How does the alpha differ from the beta form of glucose and why is it significant to animals?

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9. How do the role and structure of the following polysaccharides compare?

Starch:

Glycogen:

Cellulose:

10. Ninety percent of Asians, 75% of African-Americans, and a much smaller percent of northern Europeans are lactose intolerant. Why do you suppose we see this pattern?

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## AP: CHAPTER 5B MACROMOLECULES

1. What is the characteristic common to lipids?

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2. Lipids are synthesized by the chemical reaction \_\_\_\_\_

and broken down by the reaction \_\_\_\_\_

3. What makes fats hydrophobic?

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4. State at least two differences between saturated and unsaturated fats.

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5. How do phospholipids interact in an aqueous solution?

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6. Make a diagram of phospholipid interactions that form membranes.

7. Sketch the common building block of steroids.

8. List several functions of proteins.

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9. What are the three properties used to classify amino acids?

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10. Sketch two amino acids side-by-side, on one of them label the functional groups, then show how the two can be joined together.

11. What determines the primary structure of a protein?

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12. Describe the four levels of protein structure: (IMPORTANT!)

Name	Description	Detailed Sketch
Primary Structure		
Secondary Structure		
Tertiary Structure		
Quaternary Structure		

13. What happens to a protein during denaturation?

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14. What are the building blocks of nucleic acids? \_\_\_\_\_

15. Briefly describe two functions of DNA in the cell.

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