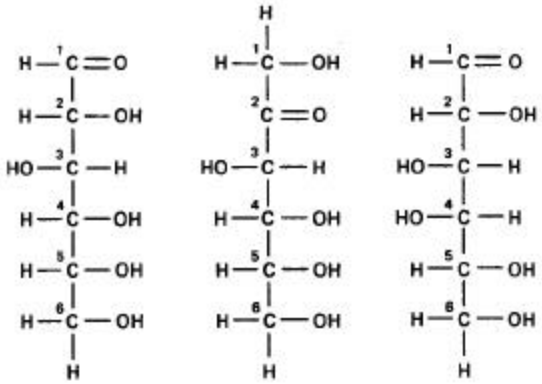
AP BIOLOGY
BIOCHEMISTRY
ACTIVITY #5

NAME_____

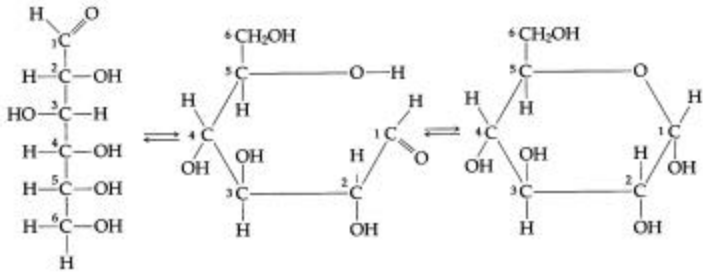
DATE_____HOUR_____

CARBOHYDRATES

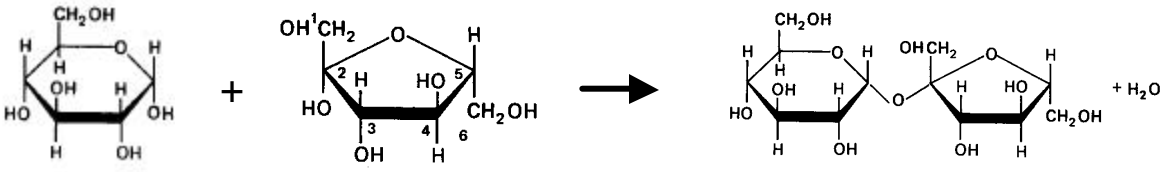
GENERAL CHARACTERISTICS:



MONOSACCHARIDES:



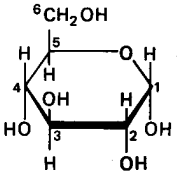
DISACCHARIDES:

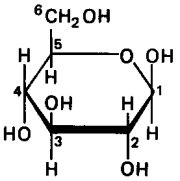


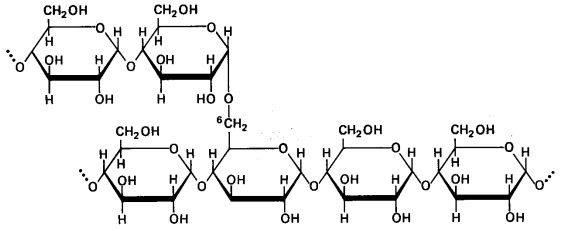
POLYSACCHARIDES:

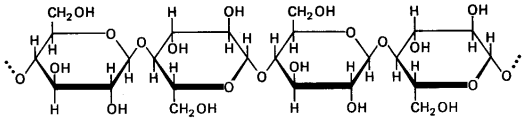
FUNCTIONS:

STARCH VS CELLULOSE









QUESTIONS:

1. Match the definition with the correct term.

A. Condensation Synthesis
B. Hydrolysis
C. Monomer
D. Polymer
E. Polymerization

_____ Large molecule that consists of many subunits called monomers

_____ Identical or similar subunits of a polymer

_____ Process of linking monomers to form a polymer

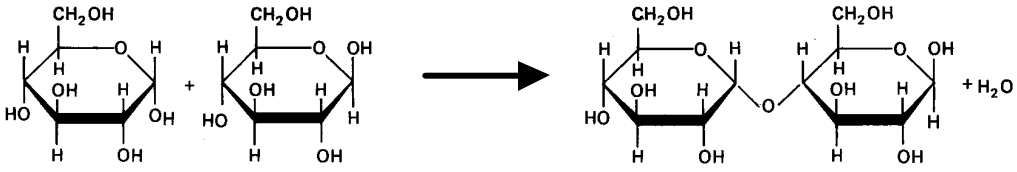
_____ Loss of a water molecule between two monomers to form a covalent bond between the monomers

_____ Breaking the covalent bond between monomers by adding a water molecule

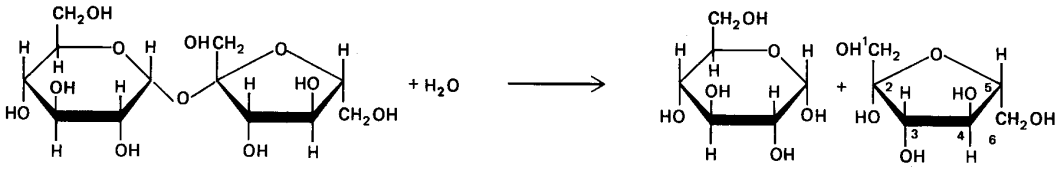
_____ AKA dehydration synthesis

2. Indicate if each of the following is an example of condensation synthesis or hydrolysis.

Reaction #1:_____



Reaction #2:_____



Reaction #3:_____
Protein, carbohydrate, or lipid synthesis

Reaction #4:_____
Digestion of proteins, carbohydrate, or lipids

3. How can you tell if a chemical equation represents :

   a. condensation synthesis? _____

   b. hydrolysis? _____

4. How are carbohydrates classified? _____

   _____

5. Match the description with the correct term.

   A. Disaccharides
   B. Lactose
   C. Maltose
   D. Monosaccharides
   E. Polysaccharides
   F. Sucrose

   _____ Simple sugar

   _____ General term used to describe a molecule that consists of 2 simple sugars covalently bonded
   _____ General term used to describe a molecule that consists of 100s or 1000s of simple sugars covalently bonded
   _____ Molecule that consists of 2 glucose molecules covalently bonded

   _____ Molecule that consists of a glucose and a galactose covalently bonded
   _____ Molecule that consists of a glucose and a fructose covalently bonded

6. Identify each of the following as a **M**onosaccharide, a **D**isaccharide, or a **P**olysaccharide.

   _____ Sucrose
   _____ Glucose
   _____ Ribose
   _____ Chitin
   _____ Starch
   _____ Glycogen
   _____ Cellulose
   _____ Fructose
   _____ Maltose
   _____ Galactose
   _____ Lactose
   _____ Deoxyribose
   _____ Glyceraldehyde
   _____ Amylose
   _____ Amylopectin

7. Draw a glycosidic linkage between two glucose molecules.

8. Listed below are characteristics of four biologically important polysaccharides. Use the key below to indicate the polysaccharide described in each characteristic.

A. Cellulose
B. Chitin
C. Glycogen
D. Starch

_____ Polymer of α-glucose

_____ Polymer of β-glucose

_____ Polymer of an amino sugar

_____ α 1-4 glycosidic linkages

_____ β 1-4 glycosidic linkages

_____ Linear and unbranched

_____ Branched

_____ Storage polysaccharide in animals

_____ Storage polysaccharide in plants

_____ Component of plant cell walls

_____ Forms the exoskeleton in arthropods; building material of cell walls in some fungi

9. How is α-glucose different from β-glucose?

_____

10. Why can't the human digestive system break down cellulose?

_____