

What to Know: Biochemistry Test – Unit 1

1. Atomic structure
2. Chemical bonds - (what are they? how do they work? relative strengths?)
 - ionic
 - hydrogen
 - Van der Waal forces
 - covalent
 - polar/nonpolar
 - role of Oxygen in a covalent bond
3. Acid/Base
 - Chemical definition of acid and base
 - pH scale
 - pH range of acid, base & neutral
 - how does the concentration of H⁺ change as pH changes?
4. Properties of water
 - Identify and define the type of bond *within* water molecule
 - Polar molecule
 - Define
 - Why is water a polar molecule?
 - Properties of water related to polarity of molecule
 - Hydrogen bonding *between* molecules
 - Cohesion
 - Surface tension
 - Adhesion
 - Insulation by ice
 - Evaporative cooling/moderates temperature
 - Universal solvent
 - Hydrophilic/hydrophobic
 - What type of molecules are hydrophilic?
 - What type of molecules are hydrophobic?
 - Be able to use models of water molecules to answer questions. (e.g. your POGIL)
5. Biological molecules
 - Macromolecules
 - Polymers, monomers
 - 4 types of macromolecules, structure & function of each
 - Carbohydrates
 - atoms present
 - what are the monomers?
 - Why can carbs store energy that's quick to metabolize compared to lipids?
 - Lipids
 - Hydrophobic – why?
 - Why can lipids store large amounts of energy compared to carbs, but is slower to metabolize?
 - Nucleic acids
 - what are the monomers?
 - function?
 - Proteins
 - what are the monomers?
 - functions?
 - Be able to decode and use models of biological macromolecules to answer questions (e.g. your POGIL)
6. Enzymes
 - Structure
 - Type of macromolecule
 - Function
 - Active site
 - Substrates
 - Enzyme/substrate specificity
 - Affect on enzyme function:
 - Temperature – high and low; why does temp have its effects
 - Substrate concentration
 - pH

Vocabulary: Unit 1

acid
activation energy
adhesion
amino acid
atom
base
buffer
capillary action
carbohydrate
catalyst
chemical reaction
cohesion
compound
covalent bond
density of ice
deoxyribonucleic acid (DNA)
electron
element
enzyme
evaporative cooling
heat capacity
hydrogen bond
hydrophobic
hydrophilic
ion
ionic bond
isotope
lipid
mixture
molecule
monomer
monosaccharide
nonpolar
nucleic acid
nucleotide
nucleus
pH scale
polar
polymer
polysaccharide
product
protein
reactant
ribonucleic acid (RNA)
solute
solution
solvent
substrate
suspension
van der Waals force