**Review 05**

**Water, con't.**

- ☆ Due to its cohesiveness, has "magical" properties
- ☆ Acts as SOLVENT into which *polar substances* dissolve
- ☆ dissociates
- ☆ is an integral part of BUILDING UP LARGER MOLECULES (polymers) from smaller ones (monomers) - dehydration synthesis - and BREAKING DOWN OF LARGER ONES into smaller ones - hydrolysis

*dehydration synthesis* (condensation reaction) – connecting together of monomers to form polymers (anabolism); *water is made as a by-product of the reaction:*

H-monomer-OH + H-monomer-OH → H-m-m-OH + $H_2O$

*hydrolysis* – reverse of dehydration synthesis; breaking down polymers into monomers (catabolism) by the addition of water to the bonds holding the monomers together *water is used by process*

H-m-m-OH + $H_2O$ → H-m-OH + H-m-OH

**Biologically Important macromolecules (large molecules)**

❶ Carbohydrates $C(H_2O)_n$

used in cells for: energy, structural components, cell recognition, provides carbon skeletons for making other molecules

monosaccharides

biologically important ones 3 to 7 carbons long

straight chain versus ring structures

examples: pentoses and hexoses

<NOTE: -ose suffix means carbohydrate (sugar)>

disaccharides (e.g. sucrose, lactose, maltose)

polysaccharides

starch...glucose storage in plants

glycogen...glucose storage in animals

cellulose...structural component (cell walls) in plants

chitin...structural component (exoskeleton) in animals

❷ Proteins

used in cells for: enzymes, structural components, contractile fibers (movement), cell-cell recognition, oxygen transport/storage, electron carriers, etc. etc.

amino acids