

## Review 05

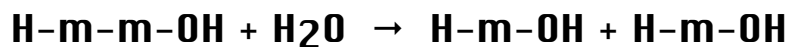
### Water, con't.

- ☆ 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:*



*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*



### Biologically Important macromolecules (large molecules)

#### ① Carbohydrates $\text{C}(\text{H}_2\text{O})_n$

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

#### ② Proteins

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

amino acids