INORGANIC CHEMISTRY

Acids:

- Are proton donors: they pick up H^+ ions in a solution EX: Na + OH-
- When a base dissolves in a solution, it releases a hydroxyl ion (OH-)

Bases:

- Our proton acceptors: they pick up H^+ ions in a solution EX: NaOH —> Na + OH-

Salts:

- Salts are ionic compounds that dissociate and separate ions in water
- Separate into **cations** (positively charged molecules) and **anions** (negatively charged)

What does pH mean?

- **pH scale** is measurement of concentration of hydrogen ions in a solution (H+)

What is considered to be acidic?

- The more hydrogen ions, the more acidic a solution is
- Acidic pH range is 0-6.99

Neutral?

- Neutral solutions have equal numbers of H+ and OH- ions
- All neutral solutions are pH 7
- Pure water is pH neutral

Basic?

- Alkaline (basic) solutions have low H+ but high pH
- Alkaline pH range is 7.01-14

ORGANIC COMPOUNDS

What is a monomer?

- smallest unit of carbohydrate

What are polymers?

- made up of monomers of monosaccharides

What is dehydration synthesis?

- The formation process of organic compounds

What is hydrolysis?

- The breakdown process of organic compounds

What are carbohydrates?

- include sugars and starches
- Contain C, H, and O
- Hydrogen and oxygen are in 2:1 ratio

Monosaccharides: one single sugar

- Pentose: Ribose and deoxyribose
- Hexose: Glucose (blood sugar), fructose

Disaccharides: two sugars

- Important disaccharides: sucrose, maltose, lactose

Polysaccharides: many sugars

- Starch: carbohydrate storage form used by plants
- Glycogen: carbohydrate storage form used by animals

How are carbohydrates formed and broken down?
- Dehydration synthesis - formation
- Hydrolysis- breakdown

How are carbohydrates stored in plants and animals?
- Plants - starch
- Animals - glycogen

What are lipids? What are the three types of lipids?
- Lipids: contain C/H/O but less then in carbohydrates, and sometimes contain P, insoluble in water

- 1) triglycerides
- 2) phospholipids
- 3) steroids

What are triglycerides?
- Called **fats** when solid and **oils** when liquid
- Composed of three fatty acids bonded to a glycerol molecule

What is the difference between saturated and unsaturated triglycerides?

- All carbons are linked by single covalent bonds, resulting in a molecule with the maximum number of H atoms (saturated with H)
- Solid at room temperature (EX: animal fats, butter)

What are phospholipids?

- Modified triglycerides
- Head and tail regions have different properties
- Head = hydrophilic (polar)
- Tail = hydrophobic (non polar)

DRAW BILAYER

What are steroids and what is their purpose?

- consist of four interlocking ring structures
- Common steroids: cholesterol, vitamin D, steroid synthesis, and blue salt synthesis
- Most important steroid is cholesterol
- Cholesterol is important in cell plasma membrane structure

What are proteins?

- Have most variety or functions of any molecule
- Chemical (enzymes) / contraction (muscle)
- Contain C,H,O,N and sometimes S and P
- Polymers of amino acids monomers held together by peptide bonds

What are amino acids and peptide bonds?

- All proteins are made from 20 types of amino acids
- Joined by **covalent bonds** called **peptide bonds**
- Contain both an amine group and acid group
- Can act as either acid or base