

TEST PREP EXAM 1

Intro & Chem:

INORGANIC

Acids:

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Bases:

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Water acts as an acid and/or base

Salts:

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- 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 solutions:

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*just think equal = neutral

- **All neutral solutions are pH 7**
- Pure water is pH neutral

Basic?

- - Alkaline pH range is 7.01-14
- *Alkaline = basic**

ORGANIC

Monomer: 1

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Polymers: 3 or more

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Dehydration synthesis:

- The **formation** process of organic compounds, usually by releasing water
- * dehy = form**

Hydrolysis:

- The **breakdown** process of organic compounds, usually by consuming water
- *hydro = break**

Carbohydrates:

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- Hydrogen and oxygen are in 2:1 ratio

Monosaccharides:

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

Disaccharides:

- Important disaccharides: sucrose, maltose, lactose

Polysaccharides:

- Starch:
- Glycogen:

Lipids:

- Lipids: contain C/H/O but less than in carbohydrates, and sometimes contain P, insoluble in water

Three types of lipids:

- 1) triglycerides (neural fats)
- 2) phospholipids
- 3) steroids

Triglycerides:

- Called **fats** when solid and **oils** when liquid
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- Saturated fats and Unsaturated fats

Phospholipids:

- Modified triglycerides
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- Head =
- Tail =

Steroids:

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- Common steroids: cholesterol, vitamin D, steroid synthesis, and blue salts
- Most important steroid is cholesterol
- Cholesterol is important in cell plasma membrane structure

Amino acids and peptide bonds:

- All proteins are made from 20 types of amino acids
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- Can act as either acid or base

Proteins:

- Have most variety or functions of any molecule
- Chemical (enzymes) / contraction (muscle)
- Contain C,H,O,N and sometimes S and P
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Nucleic acids:

- Contains C, H, O, N, and P
- Largest molecule
- Has polymers called nucleotides
- Two types:
 - Deoxyribonucleic acid (DNA):
 - Ribonucleic acid (RNA):

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- Organic compounds: carbohydrates, proteins, lipids, nucleic acids
 - Inorganic compounds: Water, salts, gases, and acids and bases

Inorganic = hydrogen

Organic = carbon

Questions:

(questions are a mixture from the chapter, to give you a sense of what the test may or may not be like! You got this!)

- 1) What is homeostasis?
- 2) What is negative feedback?

3) Negative feedback scenario:

- You walk outside in 90 degree weather and after 5 mins, your body begins to sweat. Identify the receptor, control center, and effector.

- Receptor:

- Control center:

- Effector:

4) What is positive feedback?

5) What is kinetic energy?

6) What is potential energy?

7) What is metabolism?

8) What are the four elements that make up 96% of the body?

9) How are atoms electrically neutral?

10) What is the octet rule?

11) What is an ionic bond?

12) What is a covalent bond?

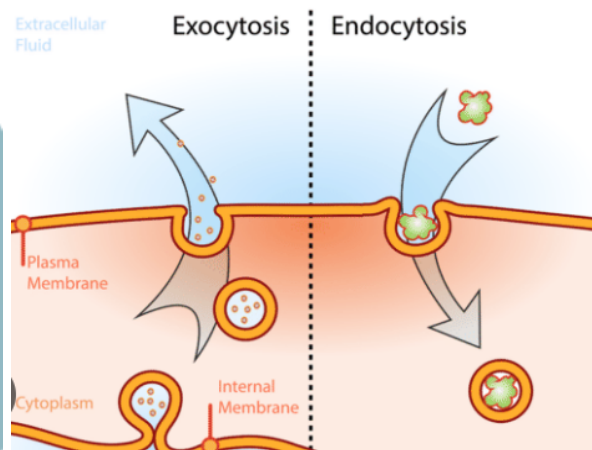
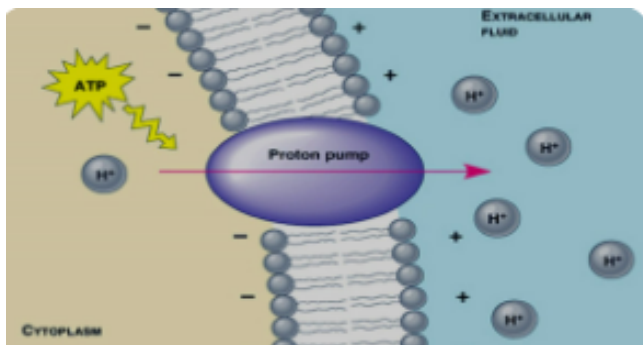
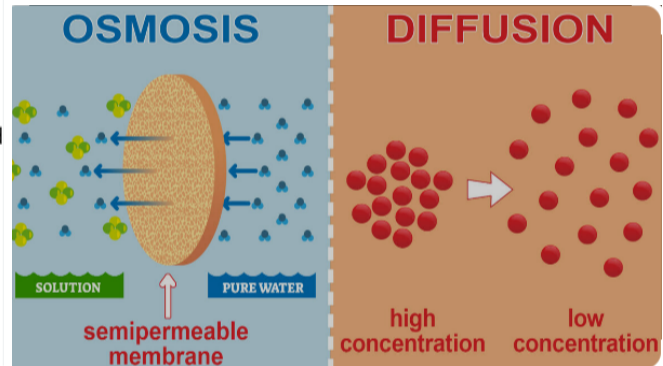
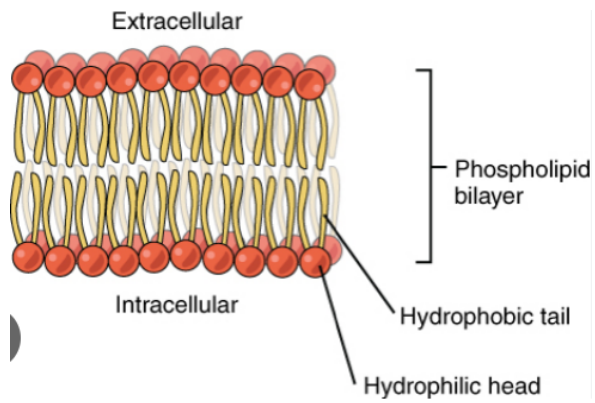
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13) What is a polar covalent bond?

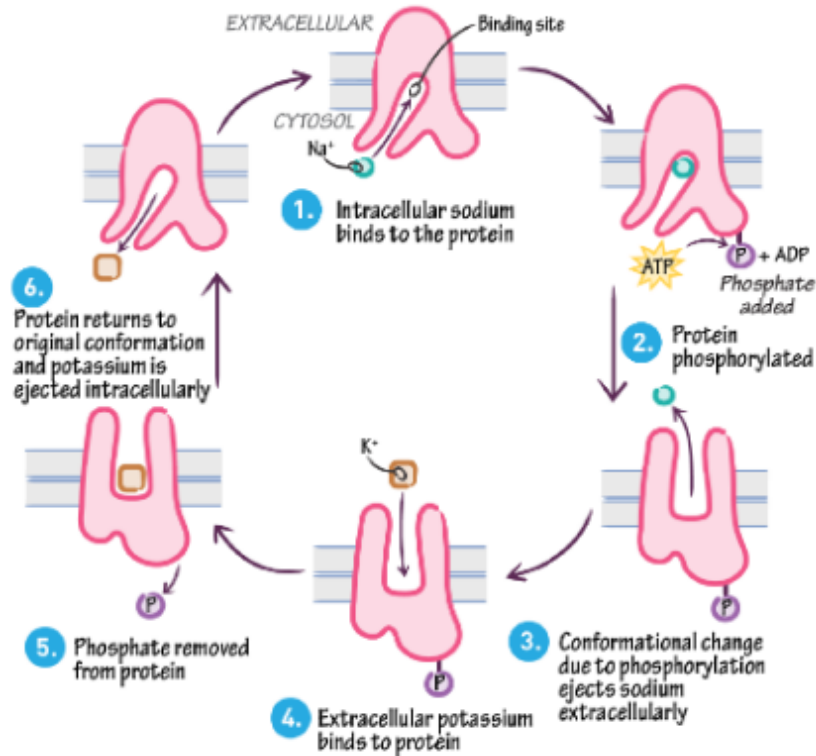
- (hint: nonpolar is equal)

14) What is a hydrogen bond?

Images:



Sodium Potassium Pump



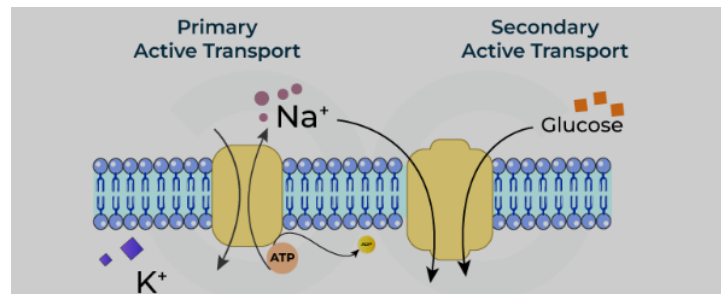
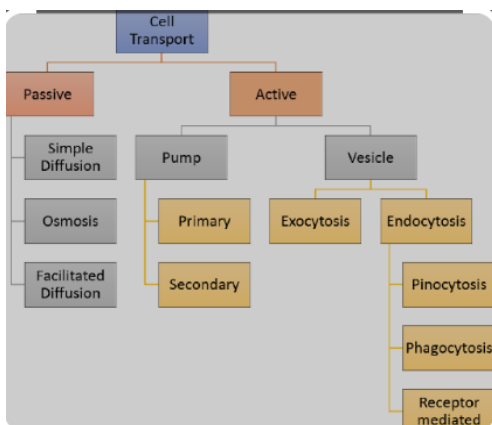
Pinocytosis

Takes in fluids and solute



Phagocytosis

Takes in larger substances (bacteria)



Cytology 1/2:

Vocab:

- Cytology:
- Cell:
- Cell theory: \
- Cell diversity: 200 different types of cells
- Generalized cell: cells have common structures and functions, three basic parts (nucleus, cytoplasm, plasma membrane)
- Cell basics:
 - Components: plasma (cell) membrane, cytoplasm, nucleus, organelles
 - Mitochondria:
 - Nucleus:
 - Ribosomes:
 - Rough ER:
 - Smooth ER:
 - Golgi apparatus:
 - Lysosomes:
 - Centrioles:

Cellular Transportation:

- Cellular transportation:

- Endoplasmic Reticulum (ER): facilitates transport within the cell

- Diffusion:

- Concentration gradient:

EX: one glass of water has more salt than the other glass of water, and vice versa

- **Passive transport:**

- **Active transport:**

***against concentration gradient**

- **Primary active transport:**

- **Secondary active transport:**

- - - - -

- Osmosis: WATER, high to low

- Tonicity:

- Hypotonic:

- Hypertonic:
- Isotonic:
- Pinocytosis:
- Exocytosis:

*substance being ejected is enclosed in a secretory vesicle

*just think of it as “being wrapped up” like a package whenever it leaves

- Carbohydrates: source of energy for immediate use, digestible carbs are turned into glucose, **glucose is oxidized to make ATP**
- Integral proteins:
- Peripheral proteins:
- Cell junctions:
- Cellular respiration: deriving energy from glucose

*Chemical formula for one molecule of glucose: $C_6 H_{12} O_6$

*Equation:

$C_6 H_{12} O_6$ (glucose) + 6 O_2 (oxygen) \ggg 6 CO_2 (carbon dioxide) + 6 H_2O (water) + energy (ATP)

- ATP:

Questions:

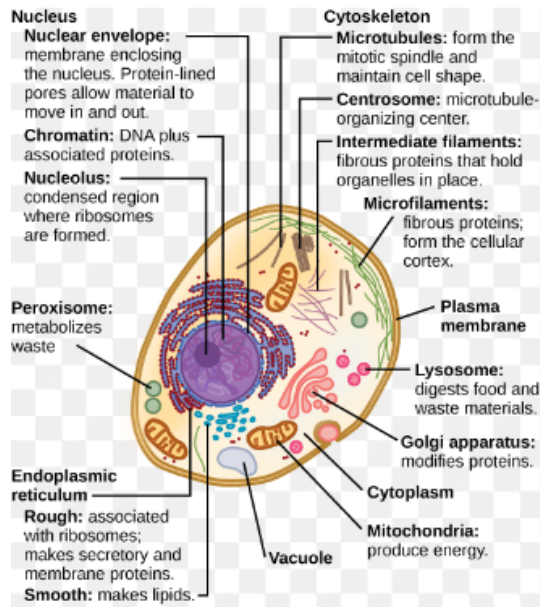
(questions are a mixture from the chapter, to give you a sense of what the test may or may not be like! You got this!)

- 1) What fibrous substance makes up the cell wall of fungal cells?
- 2) What are considered the “ancestors” of eukaryotic cells?
- 3) What makes up the structure of a plant cell wall?
- 4) What allows molecules to pass freely through the membrane?
- 5) What only allows specific molecules / ions to pass through the membrane?
- 6) What proteins catalyze specific reactions?
- 7) How do cells obtain energy?
- 8) Where is DNA found in prokaryotic cells?
- 9) What are the folded projections within the mitochondria?
- 10) What is the most important steroid? (found in bilayer of animal cells)

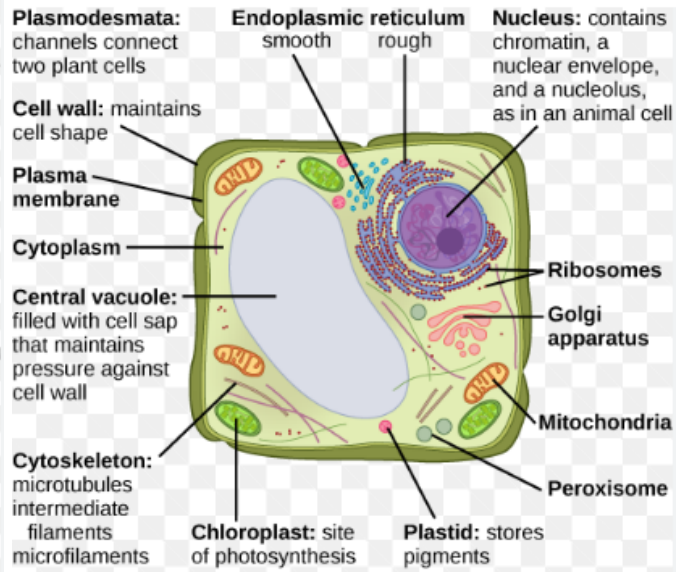
11) What phospholipids have short sugar chains attached to them?

Images:

Eukaryotic (animal)



Eukaryotic (plant)



Prokaryotic

