

n) Describe how carbohydrates are used within the plasma membrane to provide a sense of "self" and encourage the orientation of proteins.

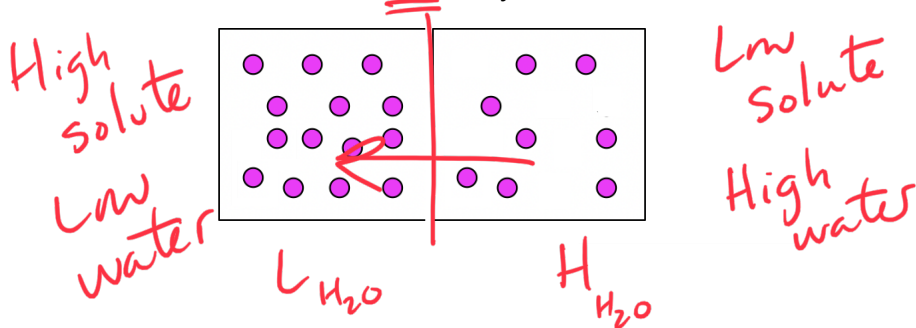
o) What is diffusion? How does it relate to concentration? What specific term is used to describe the diffusion of water?

High conc → low conc. follow "down" natural concentration gradient. "spontaneously"

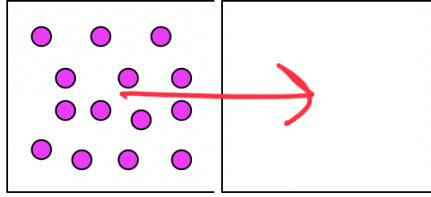
Diffusion of water: osmosis

p) Describe the movement of compounds in each of the following scenarios:

Permeable to water only.



Permeable to solute only.



- q) Describe what is meant by a hypertonic/hypotonic solution. What would happen to a blood cell placed in this environment? (The actual test will only include one of the two terms)

Hypertonic

Solution has a high concentration of solute.

water moves out of cell - shrivels



Hypotonic

Solution has a low concentration

water moves inwards → cell splodes

- r) Describe facilitated diffusion. Provide an example.

Natural diffusion (high to low) that requires a protein intermediary (transmembrane channel, port)

- s) Compare and contrast active and passive transport. Provide an example of each.

Active Transport

Requires protein intermediaries
low → high movement
Requires energy.

Passive Transport

Diffusion (small, nonpolar)
No intermediary
High → low
no energy requirement

- t) Describe the general function of the sodium-potassium (Na⁺/K⁺) ATPase pump. What is its purpose?

It is used to establish and maintain an electrochemical gradient. This gradient is used in nerve conduction.

charge → concentration

3 Na⁺ in leave, 2 K⁺ ions enter.



u) What is the difference between endocytosis and exocytosis? Provide at least one specific example of endocytosis.

endo → into the cell

exo → out of the cell

phagocytosis → eat

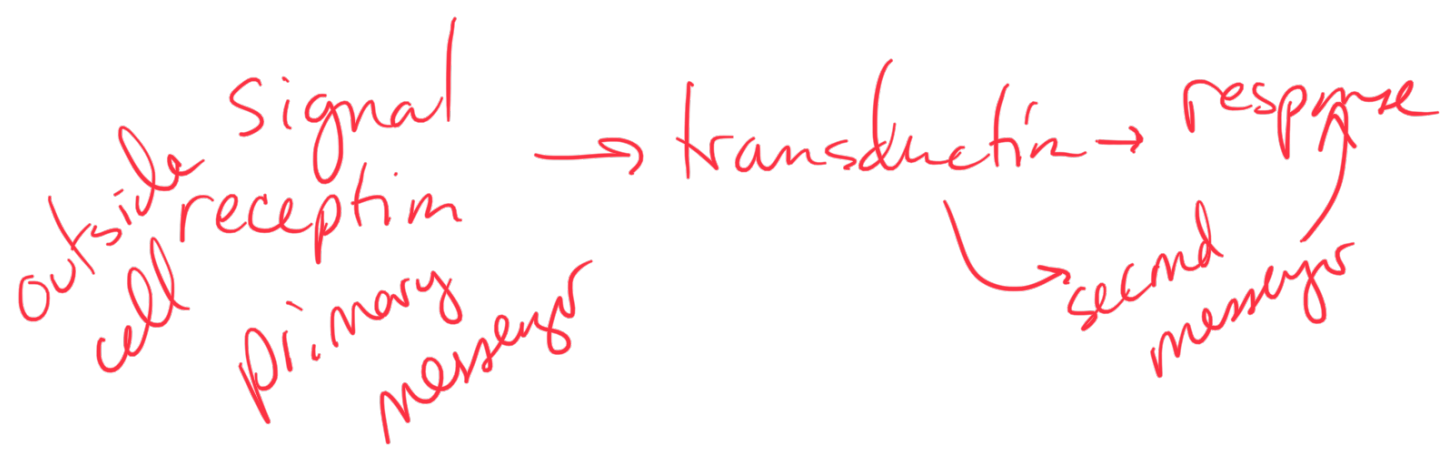
pinocytosis → drink

inside cell outside cell

v) Describe the difference between paracrine and endocrine signaling.

<p>paracrine signaling in immediate area "local" (synapses)</p>	<p>endocrine signal over long distances "global" requires blood.</p>
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w) Describe the process of signal transduction. Be sure to include the three major stages.



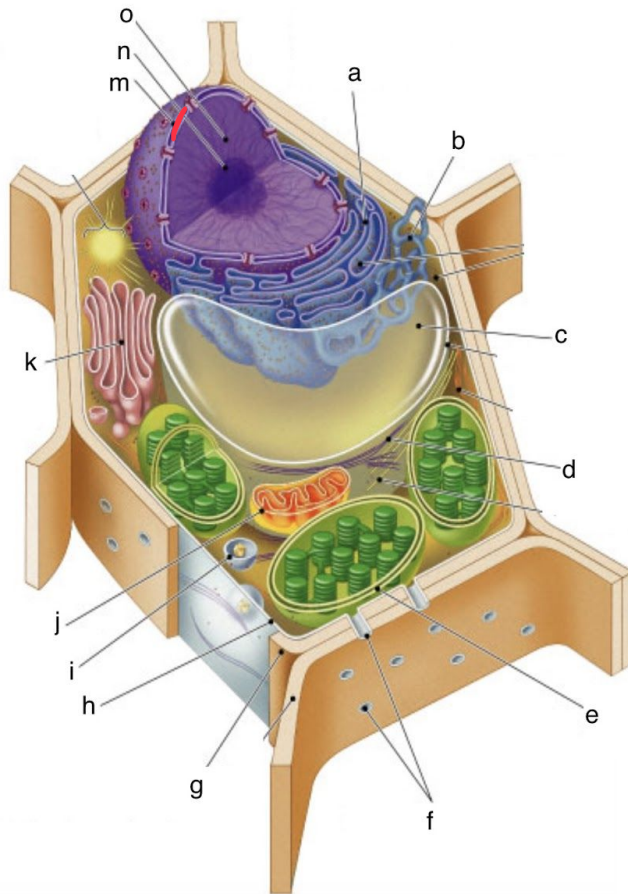
Section 2: Matching

2.) (1 pt each, 15 pts total) Match the organelle with its description.

- | | |
|-----------------------------------|---|
| <u> b </u> cell wall | a) channels through which ions, sugars, and small molecules can pass |
| <u> h </u> chloroplasts | b) protects plants, helps maintain shape |
| <u> e </u> chromatin | c) responsible for intracellular digestion and chromatin recycling of cellular materials |
| <u> f </u> cytoskeleton | d) site of cellular respiration |
| <u> a </u> gap junctions | e) complex of DNA and proteins |
| <u> k </u> golgi body | f) supports cell, regulates activities |
| <u> c </u> lysosomes | g) region where ribosome are formed |
| <u> d </u> mitochondria | h) site of photosynthesis |
| <u> o </u> nuclear pore | i) responsible for storage of materials |
| <u> g </u> nucleolus | j) translates proteins |
| <u> l </u> nucleus | k) modifies and packages proteins for transport |
| <u> j </u> ribosomes | l) control center of cell, contains DNA |
| <u> m </u> rough ER | m) site of protein translation |
| <u> n </u> smooth ER | n) synthesize lipids, detoxifies drugs and poisons |
| <u> i </u> vacuole | o) controls what enters and leaves the nucleus |

Section 3: Diagram

4.) (1 pt each, 10 pts total) Write the letter that corresponds with each of the following structures. The actual test will feature either an animal or plant cell, not both.



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Cell wall g

Central vacuole c

Chloroplast e

Chromatin o

Golgi body k

Mitochondria j

Nuclear envelope m

Nucleolus n

Rough ER a

Smooth ER b