**ACTIVE CELL TRANSPORT GUIDED NOTES**

1. There are three types of passive transport:

1. Diffusion

2. Osmosis

3. Facilitated Diffusion

***All move substances \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the gradient from HIGH to LOW concentration \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ using energy!***

2. Some larger molecules, like \_\_\_\_\_\_\_\_\_\_\_\_\_, cannot diffuse through the membrane because of their \_\_\_\_\_\_. These molecules pass through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ channels that facilitate (help) specific molecules pass into and out of the cell. This is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ diffusion, and does not require \_\_\_\_\_\_\_\_\_\_\_\_ for motion to occur. Still diffusion, and will not occur if there is not a \_\_\_\_\_\_\_\_\_ concentration of specific molecules on one side than on the other side.

3. Sometimes cells need to move substances \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a concentration gradient. This process requires \_\_\_\_\_\_\_\_\_\_\_\_, and is called \_\_\_\_\_\_\_\_\_\_\_ transport. Active transport occurs when carrier proteins embedded in the membrane bind to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ substance, change shape, and bring the substance into/out of the cell.

4. Cells can also bring substances in/out through the use of the cell membrane. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the process of taking material into the cell by folding the cell membrane into a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The pocket breaks \_\_\_\_\_\_\_\_\_\_\_\_ from the membrane and forms a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ inside the cell.

5. Cells also \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and release large amounts of material from the cell in a process known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The membrane of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fuses with the \_\_\_\_\_\_\_\_\_ membrane and forces the contents out of the cell.

 **Endocytosis Exocytosis**



6. The human nerve cell sends messages throughout the body using the sodium (Na+) –potassium (K+) pump.

Four Step Process:

1. There is more sodium outside the cell than inside the cell. It requires energy for the cell to pump sodium out AGAINST the gradient. Sodium binds to carrier protein.

2. Energy is required to change the protein’s shape and release sodium outside of the cell.

3. Potassium binds to carrier protein.

4. Energy is required to change the protein’s shape and bring potassium into the cell.