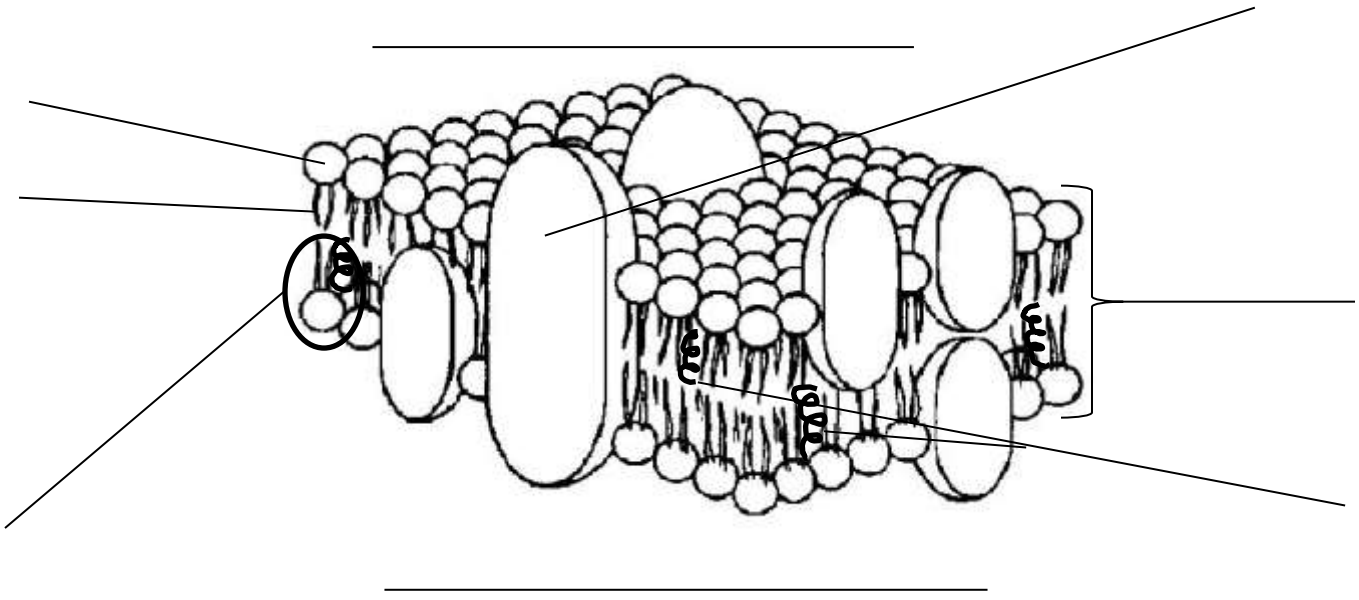
Name _____ Block _____ Date _____

Test 3 Study Guide: The Cell Membrane (40 pts)

1. Describe the 3 main functions of the cell membrane:
   - _____
   - _____
   - _____
2. Define “homeostasis” and describe an example:
   - Definition: _____
   - Example: _____
3. The cell membrane is selectively permeable. Describe what this means.

   _____
4. The cell membrane is described by the “fluid mosaic model.” This name refers to 2 properties of the cell membrane.
   - “Fluid” suggests the membrane is always _____
   - “Mosaic” refers to the membrane being made of _____
5. Label the diagram below:

Cholesterol	Extracellular Space	Fatty Acid Tail	Intercellular Space
Lipid Bilayer	Phosphate Head	Phospholipid	Protein



6. Describe the functions of each of the following in the cell membrane:

   - Integral channel proteins _____
   - Peripheral proteins _____
   - Cholesterol _____
   - Carbohydrates _____

7. Label and describe the parts of a phospholipid using the terms below:

Attracted to water	Fatty acid tail	Hydrophilic	Hydrophobic	Nonpolar	Phosphate head	Polar	Repelled by water

8. Explain why the phospholipids arrange themselves in a lipid bilayer within the cell membrane.

_____

_____

9. Complete the chart below:

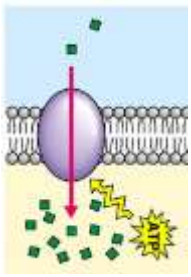
Type of transport	Requires energy?	Up or down concentration gradient?	Results in dynamic equilibrium?
Passive			
Active			

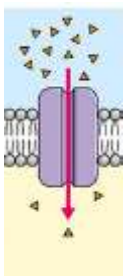
10. Passive transport is driven by <u>diffusion</u>, which results in <u>dynamic equilibrium</u> across the membrane.

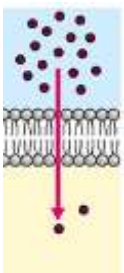
    Define the following terms:

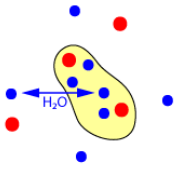
    - Diffusion _____
    - Dynamic equilibrium _____
    - Concentration gradient _____

11. Label each of the following diagrams as **simple diffusion, facilitated diffusion, osmosis, or active transport.**







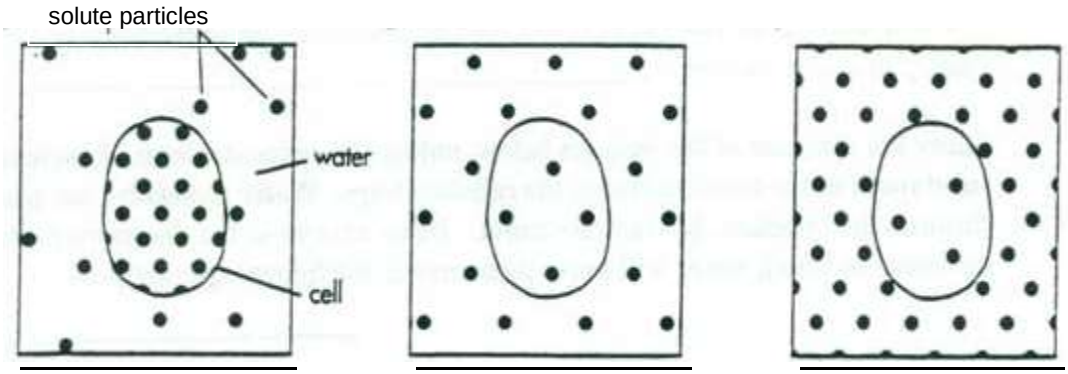


12. Complete the chart below:

Type of transport	Passive or active?	Requires energy?	Up or down concentration gradient?	Results in dynamic equilibrium ?	Requires transport proteins?	Type(s) of molecules moving across the membrane?
Simple diffusion						
Facilitated diffusion						
Osmosis						
Active Transport						

13. For each of the following diagrams:
    - Draw an arrow to show the direction of osmosis (diffusion of water)
    - Write if the cell will expand, shrink, or stay the same size
    - Label the environment as hypertonic, hypotonic, or isotonic

What direction will water diffuse? (**Draw an arrow on each picture**)



The cell will: _____ _____ _____

Environment is: _____ _____ _____

14. Cells remain small because large cells require too much _____ and do not maintain _____ as easily.

15. Cells benefit from a _____ surface area (SA) and a _____ volume (V) because they can diffuse substances _____. Therefore, the most efficient cells have a _____ surface area : volume ratio.

16. Rank the following cells from most (1) to least (3) efficient: