

TEST NAME: Homeostasis and Cell Transport Quiz
TEST ID: 3194144
GRADE: 10 - Tenth Grade
SUBJECT: Life and Physical Sciences
TEST CATEGORY: School Assessment

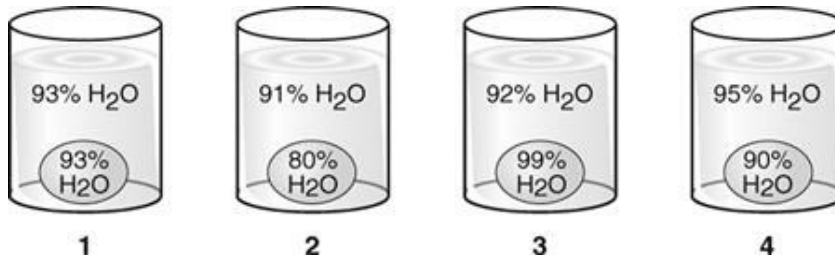
08/23/19, Homeostasis and Cell Transport Quiz

Student: _____

Class: _____

Date: _____

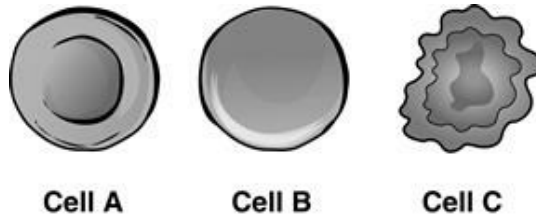
1. Each beaker shown below contains an amphibian egg collected from one of four different locations.



Which of these beakers contains an egg that would shrink?

- A. 1
B. 2
C. 3
D. 4
2. Which component of the cell membrane functions to actively transport molecules into the cell?
- A. carbohydrate
B. cytoplasm
C. phospholipid
D. protein
3. Which form of transport permits water to cross a semi-permeable membrane from areas of high water concentration to low water concentration?
- A. osmosis
B. diffusion
C. ionization
D. active transport

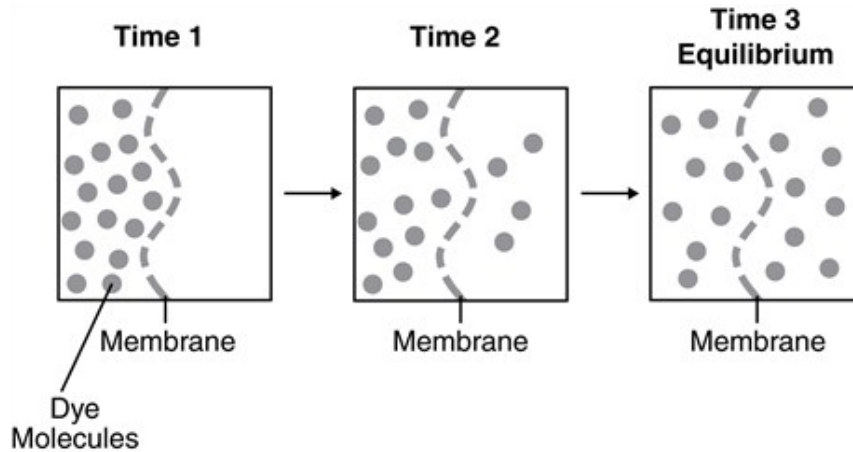
4. Shira is analyzing samples of red blood cells using a microscope. Her observations are shown.



Shira observes that the shape of Cell A appears normal, while Cell B appears swollen and Cell C is shrunken. The apparent swelling of Cell B indicates the reaction of the cell to what?

- A. an anaerobic (no oxygen) environment outside the cell
 - B. lower solute concentration outside the cell than inside
 - C. more oxygen inside the cell than what can be utilized
 - D. higher solute concentration outside the cell than inside
5. A scientist placed an egg in vinegar to dissolve the shell. After the shell dissolved, only the semipermeable membrane of the egg remained. Then she placed the egg in water, and the egg increased in size as water molecules diffused into the egg. Next, she placed the egg in corn syrup, and the egg decreased in size as the water molecules diffused out of the egg. Why were water molecules able to enter the egg but NOT sugar molecules?
- A. Semipermeable membranes will allow any type of molecules to enter and exit a cell.
 - B. The holes of the semipermeable membrane were too small to let sugar molecules through.
 - C. The holes of the semipermeable membrane needed energy to push sugar molecules through.
 - D. Semipermeable membranes must be under pressure to work.
6. What is one way the body reacts to cold weather?
- A. sneezing
 - B. swallowing
 - C. shivering
 - D. sweating

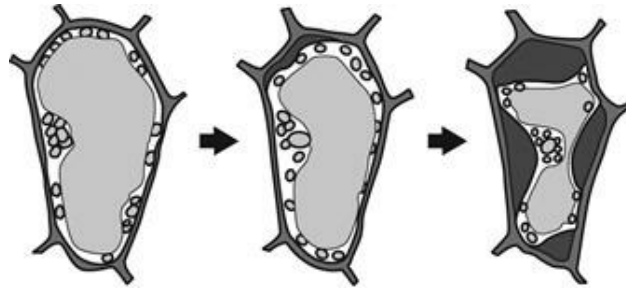
7. The series shows a water solution containing dye molecules. Over time, the dye molecules move across a membrane toward equilibrium.



Which will change **MOST** as the system moves toward equilibrium?

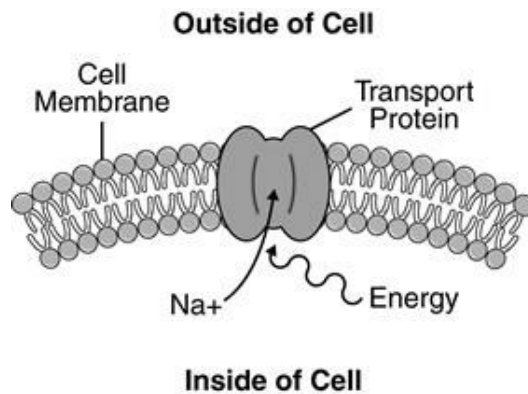
- A. the volume of the solution
 - B. the shape of dye molecules
 - C. the temperature of the water
 - D. the concentration of dye molecules
8. Which characteristic of a cell membrane allows it to control materials entering and leaving a cell?
- A. A cell membrane is surrounded by fluid.
 - B. A cell membrane is semipermeable.
 - C. A cell membrane holds organelles in place.
 - D. A cell membrane is found in plant and animal cells.

9. A student used a microscope to observe *Elodea* submerged in a solution. The student observed the cell cytoplasm pull away from the cell wall and clump together in the center of the cell.



Which statement **BEST** explains why this occurred?

- A. The cell was submerged in a pure solution.
 - B. The cell was submerged in a hypotonic solution.
 - C. The cell was submerged in an isotonic solution.
 - D. The cell was submerged in a hypertonic solution.
10. The diagram illustrates the use of energy by a nerve cell to expel a sodium ion from inside of the cell.

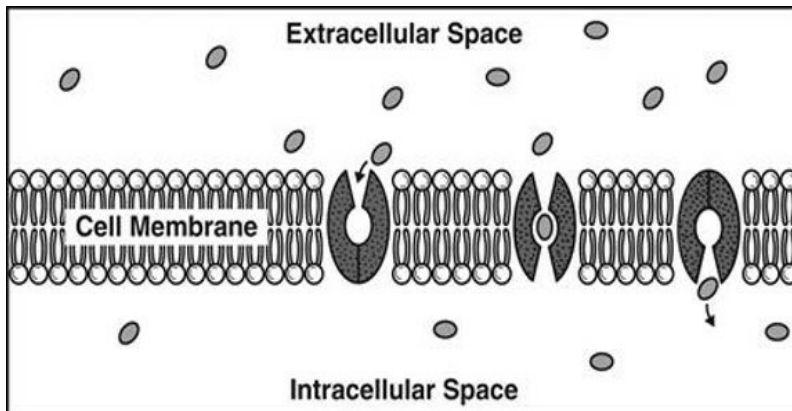


Which **BEST** explains why energy is necessary to complete this function?

- A. The ion is being transported against a concentration gradient.
- B. The ion has more kinetic energy than surrounding molecules.
- C. The ion is a waste product that is digested by the cell membrane.
- D. The ion is too large to pass through the cell membrane by diffusion.

11. A freshwater plant is placed in a container of saltwater. What will **most likely** happen to the cells of the plant?
- A. They will swell because water will move into them.
 - B. They will swell because salt will move into them.
 - C. They will shrink because water will move out of them.
 - D. They will shrink because salt will move out of them.
12. Which situation would require a buffer?
- A. lungs with too much mucus
 - B. a stomach with a pH too high
 - C. a heart with excess cholesterol
 - D. kidneys with a low concentration of water
13. Which type of cellular transport requires a cell to use energy?
- A. facilitated diffusion
 - B. active transport
 - C. osmosis
 - D. passive transport

14. This diagram illustrates the movement of a substance through a cell membrane.



What process is being used by the cell to move the molecules?

- A. exocytosis
 - B. active transport
 - C. endocytosis
 - D. facilitated diffusion
15. Which would be the **best** evidence that a cell is using active transport to move a substance across its cell membrane?
- A. Substances are moving rapidly across the cell membrane.
 - B. ATP is being rapidly consumed near the cell membrane.
 - C. Substances are moving from high to low concentrations.
 - D. Substances are moving through channels in the cell membrane.