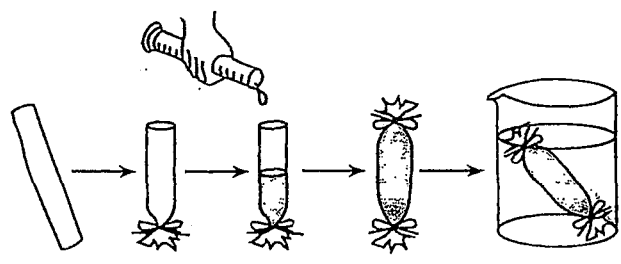


Name: **Answer Key**

Diffusion/Osmosis Practice Q's

A solution containing both starch and glucose was placed inside the model cell represented below. The model cell was then placed in a beaker containing distilled water.



Identify *one* specific substance that should have been added to the distilled water so that observations regarding movement of starch could be made. [1]

Iodine

Base your answers to questions 81 and 82 on the information and data table below and on your knowledge of biology.

A student cut three identical slices from a potato. She determined the mass of each slice. She then placed them in labeled beakers and added a different solution to each beaker. After 30 minutes, she removed each potato slice from its solution, removed the excess liquid with a paper towel, and determined the mass of each slice. The change in mass was calculated and the results are shown in the data table below.

Change in Mass of Potato in Different Solutions

Beaker	Solution	Change in Mass
1	distilled water	gained 4.0 grams
2	6% salt solution	lost 0.4 gram
3	16% salt solution	lost 4.7 grams

Identify the process that is responsible for the change in mass of each of the three slices. [1]

diffusion

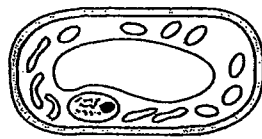
Explain why the potato slice in beaker 1 increased in mass. [1]

The distilled water diffused into the potato cells causing them to gain weight

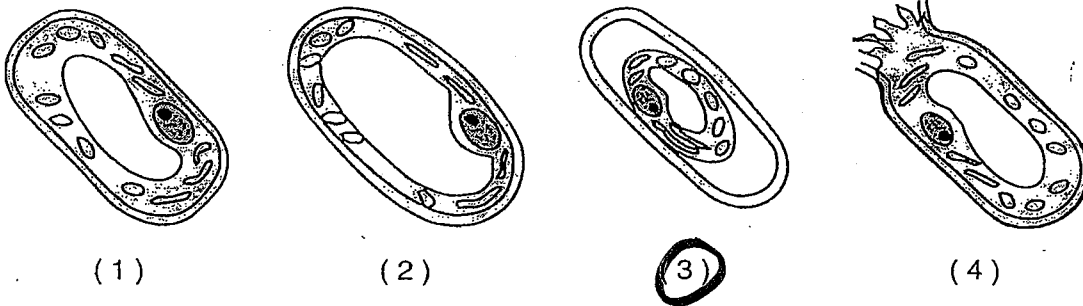
A student fills a dialysis membrane bag with a mixture of red dye, yellow dye, and water. He soaks the bag in pure water for 24 hours and then observes that the water outside the bag turns yellow. Which statement best explains the results of this experiment?

- (1) Water diffused into the membrane bag.
- (2) The dialysis membrane actively transported yellow dye molecules.
- (3) Only red dye diffused through the membrane.
- (4) The yellow dye molecules are smaller than the red dye molecules.

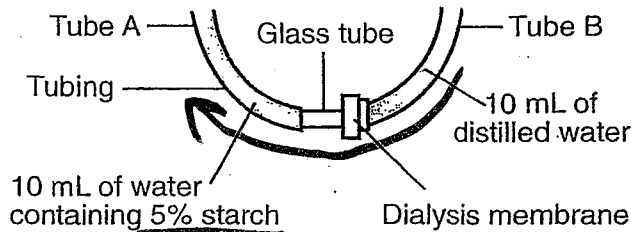
The diagram below represents a plant cell in tap water as seen with a compound light microscope.



Which diagram best represents the appearance of the cell after it has been placed in a 15% salt solution for two minutes?



The diagram below represents a laboratory setup used by a student during an investigation of diffusion.



Water moves to where there are more particles

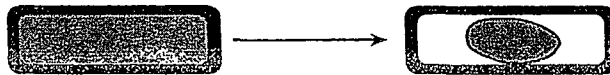
High water
no starch

Low water

Which statement best explains why the liquid in tube A will rise over a period of time?

- (1) The starch concentrations are equal on both sides of the membrane.
- (2) The water will pass from a region of lower starch concentration to one of higher starch concentration.
- (3) Water and starch volumes are the same in both tubes A and B.
- (4) The fluids in both tubes A and B will change from a higher temperature to a lower temperature.

A red onion cell has undergone a change, as represented in the diagram below.

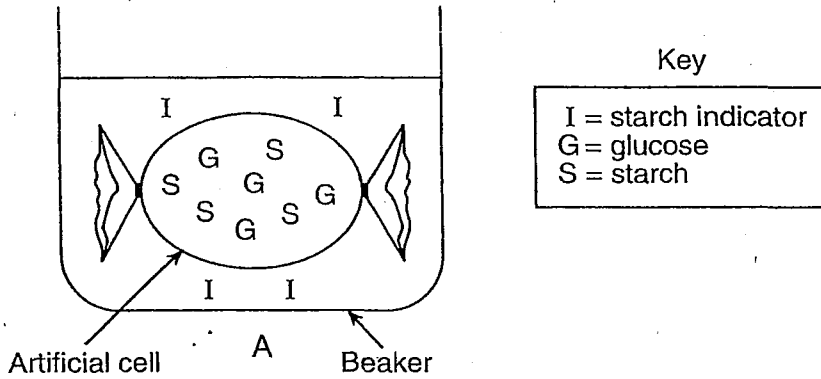


This change is most likely due to the cell being placed in

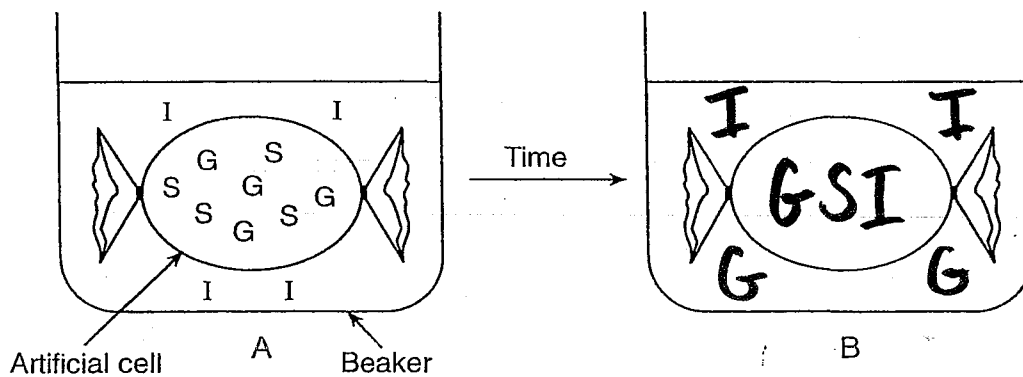
- (1) distilled water
- (2) light
- (3) salt water
- (4) darkness

Directions (60–69): For those questions that are followed by four choices, circle the *number* of the choice that best completes the statement or answers the question. For all other questions in this part, follow the directions given in the questions and record your answers in the spaces provided.

Base your answers to questions 60 and 61 on the information and diagram below and on your knowledge of biology. The diagram illustrates an investigation carried out in a laboratory activity on diffusion. The beaker and the artificial cell also contain water.



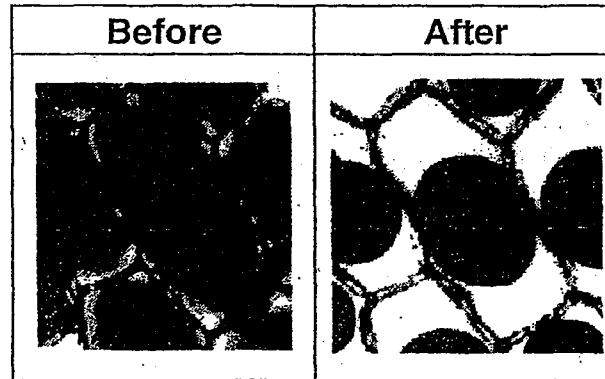
Predict what would happen over time by showing the location of molecules I, G, and S in diagram B below. [3]



State what is observed when there is a positive test for starch using the starch indicator. [1]

Blue black color change

Base your answers to questions 74 and 75 on the information and diagram below and on your knowledge of biology. The diagram represents some cells on a microscope slide before and after a substance was added to the slide.



Identify a substance that was most likely added to the slide to cause the change observed. [1]

salt solution

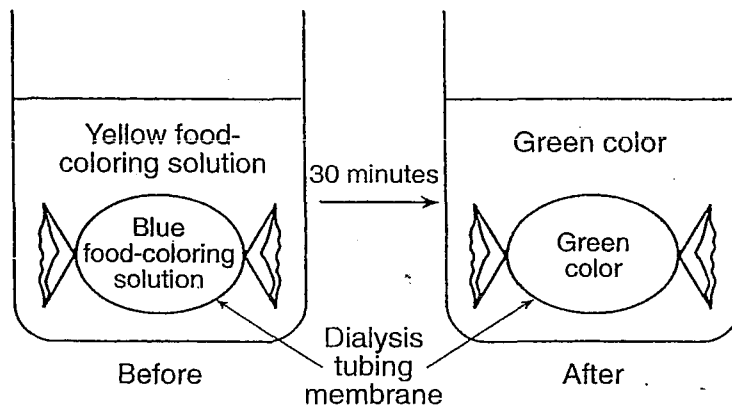
Describe a procedure that could be used to add this substance to the cells on the slide without removing the coverslip. [1]

Using a pipette, place the salt water next to the edge of the coverslip and squeeze. Blot any excess water with a paper towel.

In the *Diffusion Through a Membrane* lab, the model cell membranes allowed certain substances to pass through based on which characteristic of the diffusing substance?

- (1) size
 - (2) shape
 - (3) color
 - (4) temperature
-

Base your answers to questions 71 and 72 on the diagram below and on your knowledge of biology. The diagram shows the changes that occurred in a beaker after 30 minutes. The beaker contained water, food coloring, and a bag made from dialysis tubing membrane.



When the colors yellow and blue are combined, they produce a green color. Which statement most likely describes the relative sizes of the yellow and blue food-coloring molecules in the diagram?

- (1) The yellow food-coloring molecules are small, while the blue food-coloring molecules are large.
- (2) The yellow food-coloring molecules are large, while the blue food-coloring molecules are small.
- (3) Both the yellow food-coloring molecules and the blue food-coloring molecules are large.
- (4) Both the yellow food-coloring molecules and the blue food-coloring molecules are small.

Which statement best explains the changes shown?

- (1) Molecular movement was aided by the presence of specific carbohydrate molecules on the surface of the membrane.
- (2) Molecular movement was aided by the presence of specific enzyme molecules on the surface of the membrane.
- (3) Molecules moved across the membrane without additional energy being supplied.
- (4) Molecules moved across the membrane only when additional energy was supplied.

Diffusion