BIOZONE

QUIZ TIME

1. Match each term to its definition, as identified by its preceding letter code.

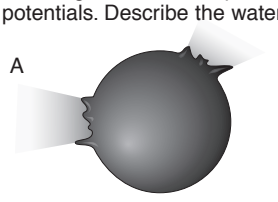
active transport	**A**	A partially-permeable phospholipid bilayer forming the boundary of all cells.
carrier protein	**B**	The movement of substances across a biological membrane without energy expenditure.
cell surface membrane	**C**	The passive movement of molecules from high to low concentration.
concentration gradient	**D**	A measure of the tendency of water to move from one area to another by osmosis. Its components are solute potential and pressure potential.
diffusion	**E**	A membrane-bound protein involved in the transport of a specific molecule across the membrane either by active transport or facilitated diffusion.
endocytosis	**F**	The energy-requiring movement of substances across a biological membrane against a concentration gradient.
facilitated diffusion	**G**	Active transport in which molecules are engulfed by the plasma membrane, forming a phagosome or food vacuole within the cell.
fluid mosaic model	**H**	Passive movement of water molecules across a partially permeable membrane down a concentration gradient.
ion pump	**I**	A transmembrane protein that moves ions across a plasma membrane against their concentration gradient.
osmosis	**J**	Gradual change in the concentration of solutes as a function of distance through the solution. In biology, this usually results from unequal distribution of ions across a membrane.
passive transport	**K**	The model for membrane structure which proposes a double phospholipid bilayer in which proteins and cholesterol are embedded.
surface area: volume ratio	**L**	This relationship determines capacity for effective diffusion in a cell.
water potential	**M**	A type of passive transport facilitated by transport proteins.

2. Match the statements in the table below to form a complete paragraph. The left hand column is in the correct order, the right hand column is not.

Transport of molecules though the plasma membrane...	....to the movement of molecules or ions against their concentration gradient.
Active transport requires the input of energy...	...high concentration to low concentration (down a concentration gradient).
Passive transport involves the movement of molecules from...	...can be active or passive.
Simple diffusion can occur...	...directly across the membrane.
Facilitated diffusion involves proteins in the plasma membrane...	...which help molecules or ions to move through.
Active transport involves membrane proteins, which couple the energy provided by ATP...	...whereas passive transport does not.

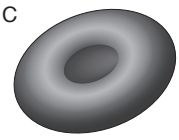
3. The diagrams below depict what happens when a red blood cell is placed into three solutions with differing water potentials. Describe the water potential of the solution (in relation to the cell) and describe what is happening:

A



B

C



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answers

1. Active transport (F), carrier protein (E), cell surface membrane (A), concentration gradient (J), diffusion (C), endocytosis (G), facilitated diffusion (M), fluid mosaic model (K), ion pump (I), osmosis (H), passive transport (B), surface area:volume ratio (L), water potential (D).

2. Transport of molecules through the plasma membrane can be active or passive. Active transport requires the input of energy whereas passive transport does not. Passive transport involves the movement of molecules from high concentration to low concentration (down a concentration gradient). Simple diffusion can occur directly across the membrane. Facilitated diffusion involves proteins in the plasma membrane, which help molecules or ions to move through. Active transport involves membrane proteins, which couple the energy provided by ATP to the movement of molecules or ions against their concentration gradient.

3. **A**. The water potential of the solution is less negative than the cell. Water moves into the cell and it bursts.
   B. The water potential of the solution is more negative than the cell. The cell is losing water and shrinking.
   C. The solution has the same water potential as the cell and the cell maintains its volume.