



Here is a worksheet on osmosis and diffusion:

1. Define diffusion.
2. Explain the process of osmosis.
3. Differentiate between diffusion and osmosis.
4. Describe the factors that affect the rate of diffusion.
5. Provide an example of diffusion in everyday life.
6. What is the role of a semipermeable membrane in osmosis?
7. Define hypertonic, hypotonic, and isotonic solutions.
8. Explain the concept of osmotic pressure.
9. What is the purpose of using a control in an osmosis experiment?
10. How does temperature impact the rate of diffusion?

Answers:

1. Diffusion is the movement of particles from a region of higher concentration to a region of lower concentration, resulting in equal distribution.
2. Osmosis is the process by which solvent molecules, usually water, pass through a semipermeable membrane from a region of lower solute concentration to a region of higher solute concentration, in order to equalize the solute concentrations on both sides.
3. Diffusion refers to the movement of particles, while osmosis specifically refers to the movement of solvent molecules through a semipermeable membrane.
4. Factors that affect the rate of diffusion include temperature, concentration gradient, surface area, and distance.
5. An example of diffusion in everyday life is the aroma of food spreading through a room. The smell molecules move from an area of higher concentration (the source) to an area of lower concentration (the rest of the room) until the scent is evenly distributed.
6. A semipermeable membrane allows certain molecules or ions to pass through while blocking others. In osmosis, the semipermeable membrane allows the passage of solvent molecules (usually water) while restricting the passage of solute particles.
7. Hypertonic solution refers to a solution with a higher solute concentration compared to another solution. Hypotonic solution refers to a solution with a lower solute concentration. Isotonic solution refers to two solutions with equal solute concentrations.
8. Osmotic pressure is the pressure required to prevent the flow of water through a semipermeable membrane during osmosis. It is determined by the concentration of solute particles in a solution.
9. A control in an osmosis experiment is used as a reference point to compare the experimental results against. It ensures that any changes observed are due to the variable being tested (e.g., concentration, temperature, etc.) and not due to other factors.
10. Temperature impacts the rate of diffusion by increasing the kinetic energy of particles. A higher temperature leads to increased particle movement and collisions, resulting in faster diffusion.