

1. Osmosis is the net movement of solvent molecules (usually water) through a semi permeable membrane from a region of higher water potential (dilute solution) to a region of lower water potential (concentrated solution).

It is a passive transport process, meaning it requires no energy. The process continues until the water potential on both sides of the membrane is equal, reaching a state of dynamic equilibrium. In biological systems, this is crucial for maintaining cell turgidity and nutrient transport.

END

2. The Green house effect is a natural process that warms the earth's surface. The process begins when solar radiation (mostly short wave UV and visible light) passes through the atmosphere and is absorbed by the Earth. The Earth then re-emits this energy as long-wave infrared radiation.

While some of this thermal energy escapes into space, Greenhouse Gases (GHGs)—such as carbon dioxide ( $\text{CO}_2$ ), methane ( $\text{CH}_4$ ), and water vapour—absorb the outgoing infrared radiation. These molecules then re-radiate the heat in all directions, including

back toward the Earth's surface. This "brapping" of heat maintains a global average temperature that supports life.

END

3. The French revolution was triggered by a confluence of systemic issues. Primarily the inequity of the Estates System created social tension; the Third Estate (commoners) bore the entire tax burden while the First and Second Estates (clergy and nobility) enjoyed legal exemptions.

Economically, France was on the brink of bankruptcy due to excessive spending on foreign wars such as (American Revolution) and royal extravagance. This was worsened by a series of bad harvests in 1780s, leading to skyrocketing bread prices and widespread famine. Finally enlightenment ideals championed by philosophers like Rousseau and Voltaire provided the intellectual framework for the bourgeoisie to challenge the "Divine Right" of the monarchy, culminating in the demand for a constitutional government.

END