**TITLE : FEATURES OF WATER**

**COURSE NAME :**

**DATE :**

**Features of water**

Water is a remarkable substance with several unique features that make it essential for life on Earth. These features are a result of its molecular structure and the way water molecules interact with each other and other substances. Here are some key features of water:

Universal solvent: water is often called the universal solvent because it has the ability to dissolve wide range of substances. This property of water allows it to transport minerals, nutrients and other essentials compounds within living organisms .it plays a critical role in chemical reactions a processes occurring in nature

High heat capacity: it has a specific heat capacity that is, it can absorb and store a significant amount of energy without experiencing a large change in temperature. This property helps regulate earth’s climate by stabilizing temperatures in both aquatic and terrestrial environments . It also helps organisms and maintain their body temperatures and provides a cooling effect through processes like sweating in humans

Surface tension: Water molecules has cohesion forces which creates surface tension causing water to form surface tension causing water to form beads or droplets on surface. This property is responsible for capillarity action where water can move against gravity in narrow spaces such as through plant roots or tiny blood vessels. Surface tension also allows some insects to walk on water in addition water have molecules that exhibit cohesion and adhesion forces (*The Teachers College Journal. (1940).* Adhesion enables water to stick to the surfaces, such as the walls of plant cells or other sides of a glass. Cohesion allows water molecules to stick water molecules to stick together, forming droplets and maintaining the flow of water in plants and blood vessels.

Transparency: pure water is transparent allowing light to pass through it easily .This property is essential for aquatic ecosystem as it enables photosynthesis in plants and algae which forms the basis of food chain . It also allows penetration of light into water bodies supporting the growth of underwater plants and providing habitats for numerous species. In addition water has an anomaly density unlike most substances water is denser in its liquid form than in its solid form .This causes ice to float on water preserving aquatic life during freezing temperatures . It also creates vertical mixing patterns in bodies of water influencing global ocean currents and helping distribute nutrients and oxygen.

Polarity: Water is a polar molecule, which means it has a positive and a negative end due to the unequal sharing of electrons between oxygen and hydrogen atoms. This polarity allows water molecules to form hydrogen bonds with each other and other polar molecules, leading to a variety of unique properties (*Bassert, J. M. (2015)).*

Furthermore, water exhibits an exceptionally high heat of vaporization, demanding a substantial input of energy to transition from a liquid to a gaseous state. This attribute plays a significant role in cooling systems and has implications for regulating the Earth's climate. Cohesion and adhesion are also fundamental aspects of water's character; cohesion fosters the attraction between water molecules, resulting in surface tension, while adhesion facilitates interactions between water molecules and other substances. These traits enable water to flow through plants via capillary action, adhere to surfaces, and coalesce into droplets.

These features of water make it a fundamental component of life and have a profound impact on the physical and chemical processes occurring on Earth. Water's unique properties are crucial for the existence and sustainability of life as we know it.

***Reference***

*Colville, T. P., Bassert, J. M. (2015). Clinical Anatomy and Physiology for Veterinary Technicians. United Kingdom: Elsevier Health Sciences.*

*(The Teachers College Journal. (1940). United States:*

*Indiana State University).*