# WATER

- Water is the most essential component of life. Hydrosphere consists about 71% of water.
- Water constitutes about 70 -90% of protoplasm
- Water continuously circulates between the atmosphere and earth's surface. This is called hydrological cycle.
- Water is the universal solvent. Therefore it acts as a medium of transport because of its properties as a solvent
- Water has great capacity for absorbing heat with only minimal change in temperature due to its **Higher specific heat**
- Quantity of heat required to convert one gram of ice at **0** ° C into water at **0** ° C is called **Latent heat of fusion**
- Quantity of heat required to convert one gram of water at **100** C to steam is called **Latent heat of vaporisation**
- Latent heat of fusion of water is - **80 calories** Latent heat of vaporisation of water is- **540** calories
- **Water has** highest **surface** tension than any other liquids - **Except** Mercury
- Aquatic organisms like water bugs can skate on the water surface due to the **-Higher surface tension of water.**
- Increase in pressure is seen as there is increase in **Depth**
- Density of water is found to be maximum at - **4** C For every **10** metres increase in depth, pressure increases by - **One atmosphere.**
- Water problems and their management in aquatic animals
- Largest habbitat in the world is **-Aquatic habitat** Based on the Salinity of water, aquatic habitat is distinguished in to - **Fresh water, Sea water & Esturine habitats**
- A phenomenon that all animals maintain constant internal environment - **is called Homeostasis**
- **The** water from a solution of lower concentration (higher water potential) diffuses across a permeable membran into a solution of higher concentration (lower water potential)In - **Osmosis**
- Regulation of water content in the body is Osmoregulation
- Water potential is higher for a solution of **Lower concentration**
- Water potential is lower for a solution of **Higher concentration** In freshwater organisms water enters into the body by - **Endosmosis**
- Well developed glomerular kidneys are present in **Fresh water fishes.**
- In freshwater fishes salts are absorbed by **chloride cells in gills** Osmoregulatory organelle of Amoeba are **-Contractile vacuoles**
- The lung fish that undergoes aestivation ( summer sleep)is - Protopterus
- Protists protect themselves by the development of **Cystwall**
- Asexual reproductive bodies formed during summer in sponges are called - Gemmules

**MARINE HABITAT**

- Water potential of sea water is less than that of **Body fluids of marine animals**
- Marine animals lose water from the body by Exosmosis
- Adaptation of marine fishes to reduce the loss of water along with urine is presence of **Aglomerular kidney; and less number of nephrons**
- Sea fishes drink water to **Compensate loss of water**
- A glomerular kidney reduces the **Loss of water along with urine** In marine fishes, excess salts are secreted by **Chloride secreting cells in gills**
- Salt water drips out through the nostrils in case of Sea gulls and penguins Ducts from salt excreting glands lead in to Nasal cavity)
- Salts glands without ducts open near the eyes in Marine reptile ( Giant Turtle)
- Adaptation seen in cartilagenous fishes to maintair their body concentration isotonic to surrounding water is - Physiological uraemia Nitrogenous substances stored in the body fluids o: cartilaginous fishes are - Urea and Trimethylamine oxide
- The region where rivers open into the sea is **Estuary**
- Stenohaline animals can tolerate - **Only narrow range of Salinity.**
- Very wide range of variations in the salinity in different seasons are found in **-Brackish waters**
- Animals that can with stand wide variations in salinity are called - Euryhaline animals
- Fishes which migrate from sea water to fresh water for breeding are - **Anadromous fishes** Eg: Hilsa,
- Salmon Fishes which migrate from freshwater to sea water for breeding are called **-Catadromous fishes** Eg: Anguilla bengalensh Migratory fish are - **Euryhaline in nature**
- **Glomerular kidneys** in euryhaline animals help them adjust to the changing Salinities
- Absorption or excretion of salts occurs due to the| presence of **-Chloride cells in the gills.**
- Salmon after entering rivers maintains cytoplasm **Isotonic**
- Water problems and their management in terrestrial animals
- Insects prevent the water loss by having **Chitinous exoskeleton**
- Earth worms need - **Moist soil to survive**

- Moloch horridus has - **Hygroscopic system of grooves in its skin. In** Moloch horridus - Water is taken by Capillary action through grooves.
- In Moloch horridus **- Water is taken by gulping mechanism in to mouth.**
- Thorny devils actually drinks - **Water from dew that falls on their backs and they can gain a; much as a gram of water in rain storm.**
- Excretory product of reptiles, birds and insects is **Semi solid Uric acid**
- Excretory product of Arachnids is Guanine Urine in mammals is hypertonic due to the presence *of* **Henle's loop in the nephrons**
- Mammals excrete - **Hyper tonic Urine**
- Wall lizards utilise - **Water present in the food**
- Adaptation of Moloch horridus to survive in deserts is presence of **-Hygroscopic skin**
- The desert animal that obtains water from its food, **Cacti** plants is - Neotoma **( wood rat)**
- Dipodomys spectabilis ( kangaroo rat) survives without drinking water as it depends on **Metabolic water.**
- Animals that cannot withstand wide variations in salinity are called **Stennohaline animals.**
- Camelus dromedarius (Camel) can survive even after losing body water **40 % of its body weight**
- A camel sweats only when its body temperature rises to **41 °C and above**
- In camels body heat is lost easily through skin due to the - **Absence of subcutaneous fat During night camel's peripheral temperature comes down to 34° C**
- **During day time camel's skin acts as - Heat sink**
- **RBC with high Osmotic variation present in Camel**
- In camels, temperature fluctuations during day and night and effeciency in sweating help in the ***Preservation of about 5 litres of water /day***
- Oval RBC of camels facilitate their flow in ***Dehydrated state***
- In one drink camel drinks ***-20-25 gallons***
- Very efficient kidneys present in- ***Camel***
- Urine is as thick syrup & Faeces are dry in - ***Camel***
- Conservation of water is crucial in the case of **Desert animals**
- Eggs protected by a shell with a fluid filled amnion around the embryo are called - **Cleidoic eggs**
- Cleidoic eggs are laid by vertebrates like **Reptiles and birds**