ALKALINE BATTERY

❖ Alkaline battery is an improved form of the dry cell, in which the electrolyte NH_4Cl is replaced by KOH.

❖ Alkaline battery consists of a zinc cylinder filled with an electrolyte consisting of powdered Zn, KOH and MnO_2 in the form of paste using starch and water.

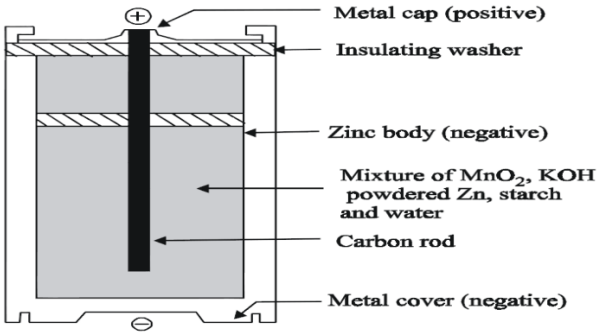
❖ A carbon rod (graphite).Acts as cathode is immersed in the electrolyte in the centre of the cell. The outside cylindrical zinc body acts as anode.

Anode: $Zn + 2OH^- \longrightarrow Zn(OH)_2 + 2e^-$

Cathode: $2MnO_2 + 2H_2O + 2e^- \longrightarrow 2MnO(OH) + 2OH^-$

Overall reaction: $Zn + 2MnO_2 + 2H_2O \longrightarrow Zn(OH)_2 + 2MnO(OH)$

The emf of the cell is 1.5V



Advantages of alkaline battery over dry battery

The main advantages of alkaline battery over dry battery are

(i)Zinc does not dissolve readily in a basic medium.

(ii)The life of alkaline battery is longer than the dry battery, because there is no corrosion on Zn.

(iii) Alkaline battery maintains its voltage, as the current is drawn from it.

Uses

It is used in calculators, watches etc.