

Lecture-05 GALVANIC CELL-II

Galvanic cell (Voltaic cell) → uses spontaneous chemical rxn to generate electricity.

oxidizing agent } reducing agent

forcing electrons to flow from an external circuit.

One reagent should get oxidized & another should get reduced. These 2 cannot be in direct contact as electrons will directly flow from one to another.

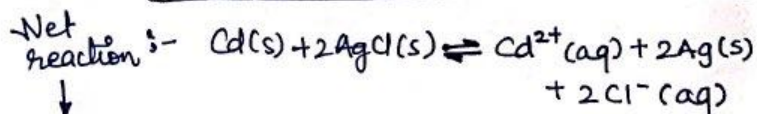
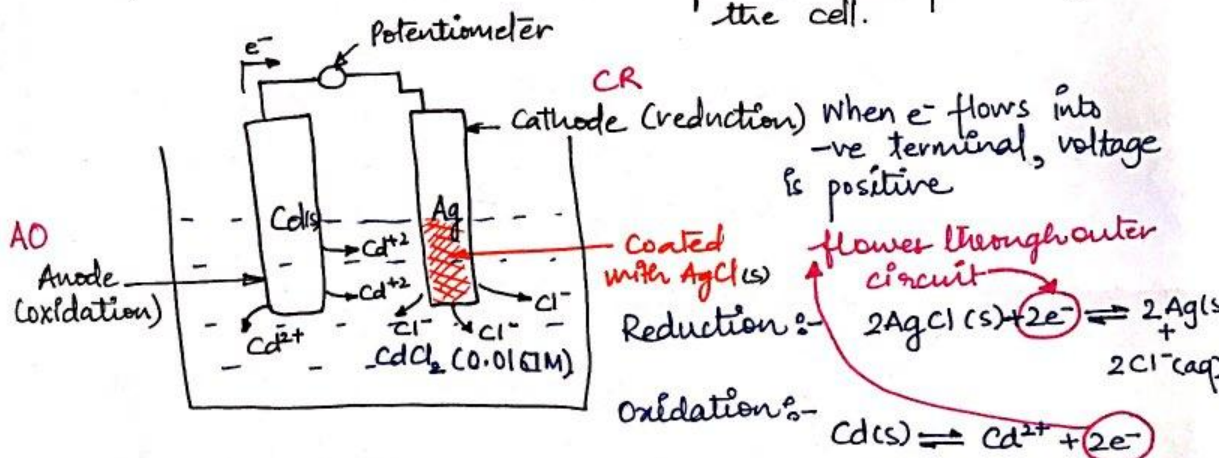
examples

Battery

→ A static compartment filled with reactant

Fuel cells

→ Fresh reactants flow past the electrode & products are flushed from the cell.

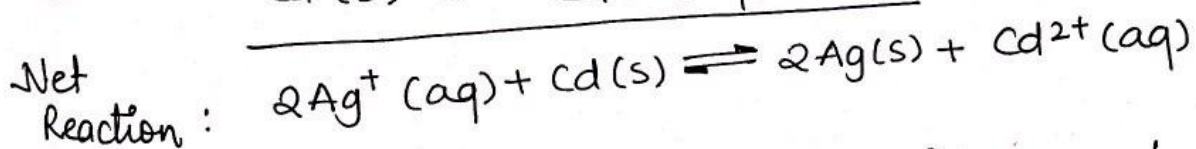
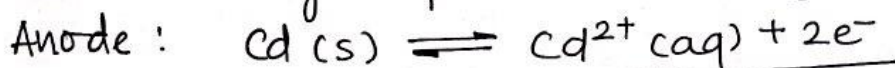
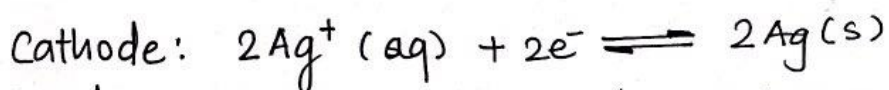
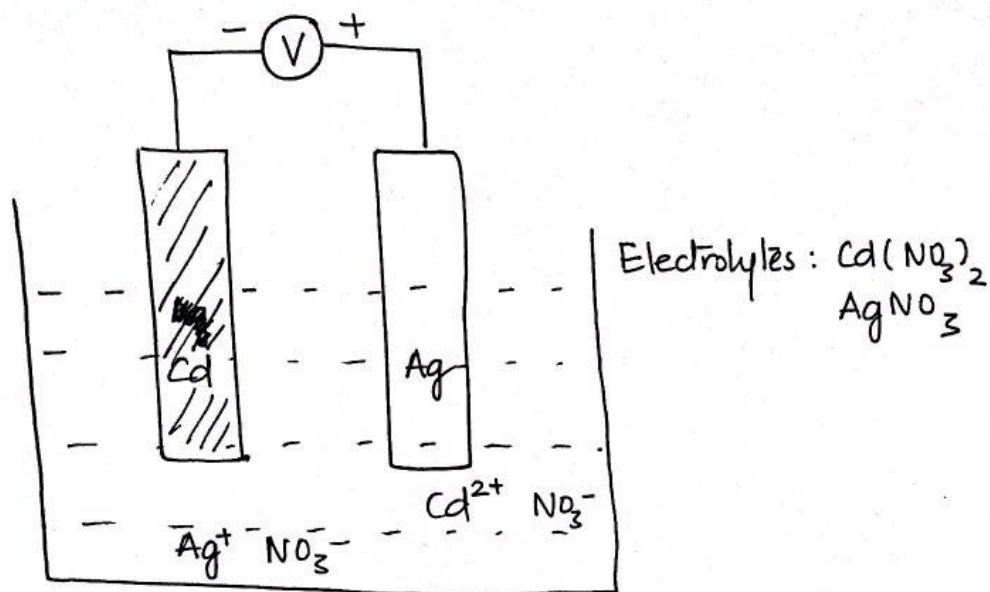


Free energy change = -150 KJ/mole of Cd = ΔG

$E = -\frac{\Delta G}{nF}$

$E = \frac{-150 \times 10^3 \text{ Joules}}{2 \text{ moles} \times 9649 \times 10^4 \text{ Coulombs/mole}}$

$E = +0.777 \text{ V}$



The net reaction is spontaneous but little current will flow through the circuit because Ag^{2+} is not forced to be reduced at Ag electrode. Aqueous Ag can react directly to $\text{Cd}(\text{s})$ giving same net reaction with no flow of e^- through external circuit.