Engineering Chemistry

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ALM-5

Q) Identify the type of corrosion and provide the mechanism involved.

Ans) (i) Uniform Corrosion:

- Type: General corrosion that occurs uniformly over the entire surface.
- Mechanism: Both anodic and cathodic reactions are spread evenly over the surface, causing the entire metal to deteriorate at a similar rate.

Example: Rusting of steel in moist air, where iron reacts uniformly with oxygen and water.

(ii) Pitting Corrosion:

- Type: Localized corrosion that results in small pits or holes.
- Mechanism: Usually occurs in the presence of chloride ions (eg., in seawater). small anodic areas develop, while the surrounding surface acts as the cathode, leading to intense localized corrosion.

Example: Stainless steel in chloride-rich environments where pits form due to chloride ions attacking the protective oxide layer.

5. Galvanic Corrosion :

- Type: Corrosion that occurs when two dissimilar metals are electrically connected in an electrolyte.
- Mechanism: The less noble metal (anode) corrodes faster, while the more noble metal is protected. electrons flow from the anode to the cathode, accelerating corrosion of the anode.

Example: Corrosion of zinc in zinc-coated steel (galvonic steel) in water, where zinc acts as a sacrificial anode.