

**Chapter 1 : Chemical Bonding and Catalysis****1-1 to 1-24****Syllabus :**

**Electronic theory of valency, chemical bonds :** Types and characteristics - Electrovalent bond, covalent bond, coordinate bond, hydrogen bond, metallic bond, metallic properties, intermolecular force of attraction. Molecular arrangement in solid, liquid and gases.

**Structure of solids :** Crystalline and amorphous solid, properties of metallic solids - unit cell- of simple cubic, body centre cubic, face centre cubic, hexagonal close pack crystals.

**Catalysis :** Types of catalysis, Catalyst, Types of Catalyst, Positive Catalyst, Negative Catalyst, Auto-catalyst, Catalytic Promoter and Catalytic inhibitor, Industrial Application of Catalyst.

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**Chapter 2 : Corrosion****2-1 to 2-61****Syllabus :**

**Corrosion :** Types of corrosion – dry corrosion, Wet corrosion. Oxidation corrosion (Atmospheric corrosion due to oxygen gas), mechanism, Types of oxide film, Wet corrosion mechanism (Hydrogen evolution in acidic medium)

**Concentration cell corrosion :** oxygen absorption mechanism in neutral or alkaline medium, Pitting corrosion, Waterline corrosion, Crevice corrosion, Waterline corrosion, Crevice corrosion.

**Factors affecting the rate of corrosion control :** Modification environment, Use of protective coatings-coating of less active metal like Tin (Tinning), coating of more active metal active metal like Zinc (Galvanizing), Anodic and cathodic protection, Choice of material – using pure metal and using metal alloys.

Electrolyte-strong and weak, Non-Electrolyte, Electrolytic, Anode, electrode potential-oxidation and reduction, Construction and working of Daniel cell ionisation and dissociation. Faradays first and second law

**Primary cell and secondary cell Electrolysis – Mechanism, Electroplating and electro-refining of copper.**

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