**SYLLABUS FOR THE SUBJECT OF CHEMISTRY**

**PAPER-I**

**Total Marks: 100**

(A). **Physical Chemistry.**

1. **Quantum Theory & Atomic Structure**

Quantum theory. The Schrodinger Wave Equation, particle in one

dimensional box and its application for Hydrogen atom. Quantum

Numbers. Chemical Bonding. Elgen Values and Elgen functions.

Degeneracy. Tunnel Effect.

2. **Chemical Thermodynamics**

First Law of Thermodynamic and Enthalpy changes. Entropy and second

Law of Thermodynamics. Standard Free Energy and Chemical

equilibrium. Concept of Residual Entropy.

3. **Electrochemistry**

Conductance and its measurement. Activity and Activity coefficients.

Measurement of Activity coefficient of strong electrolytes. Deby-Huckel

Theory and its applications for strong electrolytes. Electrodes, Electrode

Potential and its measurement. Corrosion and its prevention.

4. **Nuclear Chemistry**

Radioactivity, detection and its measurement, Kinetics of Radioactive

decay, Nuclear Fission, Nuclear Fusion, Artificial Radioactivity, uses of

Radioactive isotopes and Nuclear Reactors.

(B). **Inorganic Chemistry**

1. **Modern Theory of Chemical Bonding**

Modern Theories of Chemical bonding. Valance Bond theory, hybridization

of orbital, molecular Orbital theory, comparison of valence Bond and

Molecular orbital theories, shapes of inorganic molecules, application of

VSEPR concept.

2. **Chemistry d-Block Elements**

General Characteristics of d-Block elements, Chemistry of First Transition

Series, Transition metal complexes, structure of coordinate complex

compounds, Postulates and applications of Werner’s Chelates,

Nomenclature and Isomerism in coordinate compounds.

3. I**norganic Chemical Industries**

Sulphuric acid, Chemical Fertilizers, cements, Ceramics, Soda Ash and

Caustic Soda.

4. **Environmental Chemistry**

Concept of Environmental chemistry, Environmental Pollution, green

House Effect, Air Pollution, Water Pollution and Chemical Toxicology.