Govt. P.G. College Berinag, Pithoragarh

Chemistry Department

Course Outcome

B. Sc. I[st] SEM PAPER: Inorganic Chemistry-1

After Completing the Paper Students are able to understand:

CO1 Significance of ψ and ψ^2

CO2 Radial angular wave function

CO3 Rules of the filling of the orbitals according to the energy levels in the atom like Aufbau principle/Hund's rule.

CO4 Effective nuclear charge, Shielding effect, Slatter's rules, variation of nuclear charge in periodic table.

CO5 Atomic, Ionic, Crystal and Covalent radii.

CO6 Electronegativity, Ionisation energy and enthalpy.

CO7 Variation of electronegativity with bond order**.**

B. Sc. I[st] SEM PAPER: Organic Chemistry-1

After Completing the Paper Students are able to understand:

CO1 Types of hybridization sp, sp^2, sp^3 with examples.

CO2 Types of isomerisation and conditions.

CO3 Curve arrow notation and types of organic reactions.

CO4 I.U.P.A.C., R- S-, E and Z Nomenclature with properties of alkanes and cycloalkanes

CO5 Chiral and Achiral molecule and conformational isomerism.

B. Sc. I[st] SEM PAPER: Physical Chemistry-1

After Completing the Paper Students are able to understand:

CO1 Preparation, stability, shape and size of colloids

CO2 Colloidal dispersion, Emulsion and Gel

CO3 Equation of state and kinetic theory of gases

CO4 Types of molecular velocities and Maxwell distribution

CO5 Deviation of gases from ideal behaviour

CO6 Definitions and terminology of crystals

CO7 Laws of crystallography

B. Sc. II[nd] SEM PAPER: Inorganic Chemistry-2

After Completing the Paper Students are able to understand:

CO1 MO diagrams and bond order of diatomic molecules

CO2 Fajan's rule

CO3 Metallic-bond –electron pool

CO4 Periodic properties of s and p block elements

CO5 Diagonal relationship

CO6 Basics of metallurgy

B. Sc. II[nd] SEM PAPER: Organic Chemistry-2

After Completing the Paper Students are able to understand:

CO1 Nomenclature of alkenes, benzene, alkynes

CO2 Aromaticity

CO3 Nomenclature and classification of diene

CO4 Nomenclature of alkyl halides

CO5 Mechanism of different types of reactions.

CO6 Ortho/para orientation

B. Sc. II[nd] SEM PAPER: Physical Chemistry-2

After Completing the Paper Students are able to understand:

CO1 Catalysis

CO2 Order and molecularity of reactions

CO3 Activation energy

CO4 Thermodynamical coordinates

CO5 Concept of heat and work.

CO6 Hess's law of constant heat summation

B. Sc. III[rd] SEM PAPER: Inorganic Chemistry-3

After Completing the Paper Students are able to understand:

CO1 The meaning of the terms used in coordination chemistry

CO2 Acid and base concept

CO3 Characteristic properties of transition elements, co-ordination number and magnetic properties

CO4 Second and third transition series

CO5 Constitution of colouring compounds

B. Sc. III[rd] SEM PAPER: Organic Chemistry-3

After Completing the Paper Students are able to understand:

- **CO1** Difference between alcohols and phenols
- **CO2** Difference between aldehydes and ketones
- **CO3** Characteristic reactions of functional group of alcoholic, phenolic and carbonyl
- **CO4** Laws of photochemistry
- **CO5** Types of electromagnetic radiations and absorption spectroscopy
- **CO6** Characteristics of functional groups in absorption
- **CO7** Concept of fingerprint region, intensity and position of IR band
- **CO8** Grignard's reagent and epoxides

B. Sc. III[rd] SEM PAPER: Physical Chemistry-3

After Completing the Paper Students are able to understand:

- **CO1** Concept of engine
- **CO2** Different statements of second law of thermodynamics
- **CO3** Carnot Theorem and Carnot cycle
- **CO4** Concept of different types of processes and path
- **CO5** Criteria of spontaneity and different thermodynamic functions
- **CO6** Meaning of the phase, components and degree of freedom
- **CO7** Expression of phase rule
- **CO8** Phase equilibrium of one and two component system
- **CO9** Raoult's and Henry law
- **CO10** Non ideal systems and liquid mixtures
- **CO11** Nernst's distribution law

B. Sc. IV[th] SEM PAPER: Inorganic Chemistry-4

After Completing the Paper Students are able to understand:

- **CO1** Electrode potential
- **CO2** Electrochemical series
- **CO3** Properties of Lanthanides and actinides
- **CO4** Classification of solvents and their characteristics
- **CO5** Theories and concept of corrosion**.**

B. Sc. IVth SEM PAPER: Organic Chemistry-4

After Completing the Paper Students are able to understand:

- **CO1** Nomenclature and properties of carboxylic acids and their derivatives
- **CO2** Organic synthesis via enolates
- **CO3** Chemical reaction of nitrogen containing compounds
- **CO4** Nomenclature of alkyl halides
- **CO5** Mechanism of esterification and saponification.
- **CO6** Azo coupling

B. Sc. IVth SEM PAPER: Physical Chemistry-4

After Completing the Paper Students are able to understand:

- **CO1** Electrical conduction and electrolysis
- **CO2** Types of electrolytes
- **CO3** Transport of ions
- **CO4** Debye –Huckel Theory
- **CO5** Types of electrodes and cells.
- **CO6** Types of adsorption isotherm**.**

B. Sc. Vth SEM PAPER: Inorganic Chemistry-5

After Completing the Paper Students are able to understand:

- **CO1** Stability of metal complexes and co-ordination compounds
- **CO2** Crystal field theory
- **CO3** Crystal field splitting in Tetrahedral, Octahedral and Square planner complexes
- **CO4** Magnetic and spectroscopic properties of transition metal complexes.

B. Sc. Vth SEM PAPER: Organic Chemistry-5

After Completing the Paper Students are able to understand:

- **CO1** Principles of NMR spectroscopy, magnetic and nonmagnetic nuclei
- **CO2** Nuclear resonance, chemical shift, shielding and deshielding
- **CO3** Measurement of chemical shift
- **CO4** Characteristics of carbohydrates
- **CO5** Characteristics of organo-sulphur and organometallic compounds

B. Sc. Vth SEM PAPER: Physical Chemistry-5

After Completing the Paper Students are able to understand:

- **CO1** Introduction of electromagnetic radiation with molecule
- **CO2** Born –Oppenheimer approximation
- **CO3** Regions of the spectrum
- **CO4** Black body radiation, uncertainty principle
- **CO5** Concepts of operators

B. Sc. VIth SEM PAPER: Inorganic Chemistry-6

After Completing the Paper Students are able to understand:

- **CO1** Acid base classification
- **CO2** Hard and soft acid and bases
- **CO3** Nomenclature and classification of organometallic compounds
- **CO4** Role of trace elements in biological systems
- **CO5** Silicones and polymer of phosphorous
- **CO6** Cement and fertilizers.

B. Sc. VIth SEM PAPER: Organic Chemistry-6

After Completing the Paper Students are able to understand:

- **CO1** Chemistry of terpenoids
- **CO2** Types of polymers
- **CO3** Classification of amino acids, proteins and peptides with their properties
- **CO4** Soap and detergents
- **CO5** Colour and constitution
- **CO6** Synthesis and use of dyes**.**

B. Sc. VIth SEM PAPER: Physical Chemistry-6
After Completing the Paper Students are able to understand: **CO1** Molecular structure in relation to optical rotation **CO2** Dipole moments **CO3** Laws of photochemistry **CO4** Ideal and non ideal solutions **CO5** Third law of thermodynamics