Program Outcomes, Program Specific Outcomes and Course Outcomes

(Govt. Jajwalyadev Naveen Girls Collage Janjgir,C.G.)

DEPARTMENT OF CHEMISTRY

Programme Outcomes:- B. Sc. Chemistry

After successful completion of three year degree program in Chemistry a student should be able to;

PO-1. Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.

PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion.

PO-3. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.

PO-4. Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.

PO-5. Find out the green route for chemical reaction for sustainable development.

PO-6. To inculcate the scientific temperament in the students and outside the scientific community.

PO-7. Use modern techniques, decent equipments and Chemistry software‟s

Programme Specific Outcomes :- B. Sc. Chemistry

PSO-1. Gain the knowledge of Chemistry through theory and practical‟s.

PSO-2. To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.

PSO-3. Identify chemical formulae and solve numerical problems.

PSO-4. Use modern chemical tools, Models, Chem-draw, Charts and Equipments.

PSO-5. Know structure-activity relationship.

PSO-6. Understand good laboratory practices and safety.

PSO-7. Develop research oriented skills.

PSO-8. make aware and handle the sophisticated instruments/equipments.

PSO-9. Know the structure and bonding in molecules/ ions and predict the Structure of molecule/ions.

PSO-10. Understand the various type of aliphatic, aromatic, nucleophilic substitution reaction.

PSO-11. Understand and apply principles of Organic Chemistry for understanding the scientific phenomenon in Reaction mechanisms.

PSO-12. Learn the Familiar name reactions and their reaction mechanisms.

PSO-13. Understand good laboratory practices and safety.

PSO-14. Study of organometallic reactions.

PSO-15. Study of free radical,bycyclic compound, conjugate addition of Enolates and pericyclic reactions.

PSO-16. Study of biological mechanisms using amino acids.

Course Outcomes :- B. Sc. Chemistry

After completion of these courses students should be able to understand ;

Physical Chemistry

CO-1. Write an expression for rate constant K for third order reaction

CO-2. Solve the numerical problems based on Rate constant

CO-3.Understand the term specific volume, molar volume and molar refraction

CO-4. Know the meaning of phase, component and degree of freedom

CO-5. Derive the expression for rotational spectra for the transition from J to J+1

CO-6.Understand Mechanics of system of particles.

CO-7.Know the Redox reaction.

CO-8 Study the Crystal Field Theory.

CO-9 Solve the cell reaction and calculate EMF.

CO-10. Calculate interplanar distance.

CO-11.Understand De-Broglie hypothesis and Uncertainty principle

CO-12. Derive Schrodinger‟s time dependent and independent equations

Inorganic Chemistry

CO-1. Know the meaning of various terms involved in co-ordination chemistry

CO-2. To understand Werner‟s formulation of complexes and identify the types of valences

CO-3. Know the limitations of VBT

CO-4. Know the shapes of d-orbital‟s and degeneracy of d-orbital‟s

CO-5. Draw the geometrical and optical isomerism of complexes

CO-6 Study the electronic configuration of lanthanides and actinides.

CO-7. Get knowledge of Crystalline solid.

CO-8. Understand different operation in stoichiometric molecule.

CO-9. Study the Bio-inorganic chemistry.

CO-10. Understand the p-type semiconductor and n-type semiconductor.

Organic Chemistry

CO-1. Define organic acids and bases.

CO-2. Distinguish between geometrical and optical isomerism.

CO-3. Discuss kinetics, mechanism and stereochemistry of SN1 and SN2 reactions.

CO-4. Compare between E1 and E2 reactions.

CO-5. Understand the evidences, reactivity and mechanism of various elimination and substitution reactions.

CO-6.To study UV, IR and NMR spectroscopy.

CO-7. Discuss different types of rearrangement reactions.

CO-8. Determine structure of compound by spectroscopic methods.

CO-9. Understand the difference between carbocation and carbanion.

CO-10.To study alkaloids, Ephedrine, citral molecule with their properties and application.

Analytical Chemistry

CO-1. Know the principles of common ion effect and solubility product.

CO-2. Study the methods of thermo-gravimetric analysis.

CO-3. Understand the principles of Spectro-photometric analysis and properties of electromagnetic radiations.

CO-4. Study the Voltammetry and Polarography as an analytical tool.

CO-5. Measure the absorbance of atoms by AAS.

CO-6. Know the different analytical techniques.

CO-7. To understand different types of separation techniques.

CO-8. To study principle, construction and working of GC and HPLC.

CO-9. To give an extended knowledge about chromatographic techniques used for separation of amino acids.

CO-10. Discuss the problem based on distribution coefficient and extraction techniques.

Industrial Chemistry

CO-1. Know the importance of chemical industry.

CO-2. Classify various insecticides.

CO-3. Study the nutritive aspects of food constituents.

CO-4. Understand the characteristics of some food starches.

CO-5. Study the manufacture of cement, dyes, Glass, Soap and Detergents by modern methods.

CO-6. Know the various pharmaceutical drugs, their application and synthesis.

CO-7. To study the waste management.

CO-8. To understand the function of dyes, paints and pigments.

CO-9. To study the various type of surfactants.

CO-10. To know about molasses and bagasse.

CO-11. To study the different types of polymer.

Agriculture Chemistry

CO-1. Know the role of agriculture chemistry and its potential

CO-2. Understand the basic concept of soil, properties of soil & its classification on the basis of pH.

CO-3. Know the different plant nutrients, their functions and deficiency symptoms.

CO-4. Identify the problematic soil and recommend a method for their reclamation.

CO-5. Have the knowledge of various pesticides, insecticides, fungicides and herbicides.

Dairy Chemistry

CO-1. Know the market of milk in different breeds.

CO-2. Understand the basic principle of sterilization, homogenization, and standardization of milk.

CO-3. Study the flow sheet diagram of shrikhand powder, whey powder, and ice-cream.

CO-4. Study the different nutrient value in milk.

Physical chemistry practical

CO-1. Calculate molar and normal solution of various concentrations.

CO-2. Determine specific rotations and percentage of to optically active substances by polorimetrically.

CO-3. Study the energy of activation and second order reaction.

CO-4. Study the stability of complex ion and stranded free energy change and equilibrium constant by potentiometry.

CO-5. Find out the acidity, Basicity and PKa Value on pH meter.

Inorganic Chemistry Practical

CO-1. Study the gravimetric and volumetric analysis of ores and alloy.

CO-2. Prepare a various inorganic complexes and determine its % purity.

CO-3. To study binary mixture with removal of borate and phosphate.

CO-4. To understand the chromatographic techniques

Organic Chemistry Practical

CO-1. Perform the Binary mixtures.

CO-2. Preparation of organic compounds, their purifications and runTLC.

CO-3. Determination of physical constant: Melting point, Boiling point.

CO-4. Different separation techniques.