

॥संहतीकार्यसाधिका, शिलंम परमभूषणं॥



**Shetkari Shikshan Prasarak Mandal's  
KRISHNA MAHAVIDYALYA RETHARE BK.**

**Department of Chemistry**

**PROGRAM SPECIFIC OUTCOMES**

**AND**

**COURSE OUTCOMES**

**FOR OUTCOME-BASED EDUCATION**

**(Academic year 2020-21)**



Shetkari Shikshan Prasarak Mandal's

**KRISHNA MAHAVIDYALAYA, RETHARE BK**

**PROGRAMME OUTCOMES**

**DEPARTMENT OF CHEMISTRY**

**Academic Year 2020-2021**

After completion of the B. Sc programme, the students will develop ability:

- A. The B.Sc Programme develops an insight of scientific inquisitiveness among students.
- B. It increases **scientific** temperament and attitude among science graduates.
- C. It creates a systematic method of study ie. Observation, Experiment, and Conclusion which is a basic principle of scientific research.
- D. The qualities of a science – observation, precision, analytical mind, logical thinking, clarity of thought and expression, systematic approach, qualitative and quantitative decision making are enlarged.
- E. The program also empowers the graduates to appear for various competitive examinations or choose the post graduate programme of their choice.
- F. It trains the learners to extract information, formulate a scientific method of study and solve problems in a systematic and logical manner
- G. This programme enables the learners to perform jobs in diverse fields such as agriculture, industries, engineering , education, banking, development-planning, business, public service, self-



business etc., efficiently.

- H. The programme also helps the students to perform their carrier in the field of basic and applied research.
- I. Understood the basic concepts, fundamental principles, and scientific theories related to various scientific phenomena and their relevancies in the day to-day life.

After completion of the programme, the students will develop ability:



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**PROGRAMME SPECIFIC OUTCOMES**

**Academic Year 2020-2021**

- PSO-A . The students will understand basic facts and concepts in chemistry
- PSO-B . To make students aware about analytical industrial knowledge.
- PSO-C . To develop problem solving skills in chemistry.
- PSO-D .To acquire the knowledge of terms, facts, concept, processes and principles of chemistry.
- PSO-E . To expose and to develop interest in the field of chemistry.
- PSO-F. To develop knowledge and apply to society.
- PSO-G. This programme enables the learners to perform jobs in diverse fields such as agriculture, industries, engineering, education, development-planning, business, public service, self-business etc., Efficiently.
- PSO-H. The programme also helps the students to perform their carrier in the field of basic and applied chemical research.



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**DEPARTMENT OF CHEMISTRY**  
**CHEMISTRY COURSE OUTCOMES**

**Academic Year 2020-2021**

**B.Sc. (Chemistry )**

**Annexure-C**

**Course Outcomes: B.Sc. I Paper I: DSC -3A :Inorganic Chemistry**

By the end of this Course students should be able to know about:

- CO1. The student will understand atomic structure, the nature, applications of element of S block elements.
- CO2. The student will understand the ionic solid and their crystal structure.
- CO3. The student will get the knowledge of VBT.
- CO 4. The student will get the knowledge of MOT.

**Paper II: DSC-4A: Organic Chemistry**


By the end of this Course students should be able to know about:

- CO1. The students will able to discuss Fundamentals of organic reactions and
- CO2. The students will able to discuss the concept of stereochemistry.
- CO3. The student will get the knowledge of aromatic and non-aromatic compounds
- CO4. The student will explain cycloalkanes , cycloalkenes and alkadienes.

**Paper III: DSC-3B: Physical chemistry.**

By the end of this Course students should be able to know about:

- CO1. The students will understand, thermodynamics and thermochemistry .
- CO2. The students will learn chemical equilibrium.
- CO3. The student will explain kinetic theory of gases.



CO4. The student will study rate of reaction and various order of reactions .

**Paper IV: DSC-4B: Analytical Chemistry**

By the end of this Course students should be able to know about:

CO1. The students will able to understand the concept of analytical chemistry.

CO2. The students will able to understand the qualitative and quantitative methods of Chromatography.

CO3. Students will understand basics of titrations methods.

CO4. The students will able to discuss water analysis.

CO5. The students will able to discuss about fertilizer analytical methods.

**Paper V: DSC-C3: Physical Chemistry**

By the end of this Course students should be able to know about:

CO1. Learning and understanding conductivity and transport number of the aqueous solutions with different applications.

CO2. To provide a good knowledge of physical properties of liquids.

CO3. Learning and understanding surface phenomena at heterogeneous surfaces.

CO4. Learning the various Nuclear phenomena and measurement of nuclear radiations.

CO5. Learning and understanding the knowledge about third order reaction and theories of reaction rates.



### **Paper VI : DSC-C4: Industrial Chemistry**

By the end of this Course students should be able to know about:

CO1. The students will be able to discuss the Scope and basic concept of industrial chemistry.

CO2. The students will explain Knowledge of some unit operations

CO3. The student will explain applications Understanding the process of corrosion and Knowledge of prevention from corrosion processes.

CO4. The student will get the knowledge of Knowledge of Indian paper industry

CO5. The student will get Knowledge about the chemical nature and cleansing action of soap

### **Paper VII: DSC-D3 :Inorganic Chemistry**

By the end of this Course students should be able to know about:

CO1. The student will get the knowledge of coordination compounds and their applications.

CO2. The student will get the knowledge chelation and applications in day today life.

CO3. The student will understand the nature, applications of P - block elements.

CO4. Student will be capable of understanding the properties of 3d series elements

CO5. The student will learn the basic knowledge about the qualitative analysis of inorganic compounds



### **Paper VIII : DSC-D4: Organic Chemistry**

By the end of this Course students should be able to know about:

CO1. The students will To impart knowledge about the synthesis, reactivity and applications of carboxylic acids.

CO2. The students will able to discuss Knowledge about classification, preparation and applications of amines and diazonium salts.

CO3. Understanding the classification, configuration and structure of carbohydrates.

CO4. The students are able to understand the nomenclature and reactivity of aldehydes and ketones.

CO5. The students will understand importance of stereochemistry in the processes of industries.

### **Paper IX: DSE-E5: Inorganic Chemistry**

By the end of this Course students should be able to know about:

CO1. Students will able to understand Hard and Soft acids and Bases (HSAB)

CO2. Students will able to understand metal ligand bonding in transition metal complexes and their applications in industrial word.

CO3. Students will able to understand the concept of metal semiconductor and superconductor and its uses.

CO4. Students will able to understand the Organometallic chemistry.

CO5. The classification, types, mechanism and applications of catalyst in industrial fields is explained.

### **Paper X: DSE-E6: Organic chemistry**

By the end of this Course students should be able to know about:

CO1. The students will able to understand the physical methods of analysis.





CO2. The students will be able to discuss the data analysis and deductions of the structure of unknown organic compounds.

CO3. The students will understand the importance of spectroscopy in the manufacturing

processes of industries. It has wide applications in Research and development sections of various industries.

CO4. The students are able to understand the importance of data analysis and the confirmation of structure of unknown organic compounds.

CO5. The students will understand the concept and need of spectroscopy in chemical industry.

#### **Paper XI: DSE-E7: Physical Chemistry**

By the end of this Course students should be able to know about:

CO1. Students will be able to understand quantum Chemistry

CO2. Students will be able to understand Knowledge about spectroscopy

CO3. Students will know Learning and understanding photochemical laws, reactions and various photochemical phenomena.

CO4. Learning the various types of solutions, relations vapour pressure, temperature relations.

CO5. Learning and understanding the knowledge of emf measurements, types of electrodes, different types of cells, various applications of emf measurements.

#### **Paper XII: DSE-E8: Analytical Chemistry**

By the end of this Course students should be able to know about:

CO1. The students will be able to understand techniques of gravimetric analysis.

CO2. The students will be able to Study instrumental analysis of alkali and alkaline earth elements.



CO3. Students will understand basics of colorimetry and spectrophotometry.

CO4. The students will be able to understand the procedure of potentiometric titration and their application.

CO5. Understanding the basics of ion exchange and column adsorption chromatography, Quality control practices in analytical industries / laboratories.

### **Paper XIII: DSE-F5 : Inorganic Chemistry**

By the end of this Course students should be able to know about:

CO1. Students will be able to understand inorganic reaction mechanism.

CO2. Students will be able to understand thermodynamic and chemical kinetic aspect of metal complexes.

CO3. Students will be able to understand iron and steel and their production technique.

CO4. Students will be able to understand the concept bioinorganic chemistry.

CO5. The generation of nuclear power with the help of nuclear reactions is highlighted.

### **Paper XIV: DSE-F6: Organic chemistry**

By the end of this Course students should be able to know about:

CO1. Students will be able to understand of reagents used in organic transformations and various reactions used in organic synthesis.

CO2. Students will be able to understand Knowing basic terms used in retrosynthetic analysis, retrosynthesis of some organic compounds.

CO3. Students will know electrophilic addition reactions and their applicability in day to day life.

CO4. Students will be able to understand definition and scope Natural Products.

CO5. Students will be able to understand the Pharmaceutical products and their uses.



### **Paper XV: DSE-F7: Physical Chemistry**

By the end of this Course students should be able to know about:

CO1. Students will be able to understand concepts and applications of phase rule.

CO2. Students will be able to understand Knowledge about Thermodynamics,

CO3. Students will be able to understand the term solid state chemistry, synthetic applications.

CO4. Students will know Learning of kinetics, Simultaneous reactions such as i) opposing reaction ii) side reaction iii) consecutive reactions: iv) chain reaction v) explosive reaction

CO5. Learning and understanding the knowledge of distribution law

### **Paper XVI: DSE-F8: Industrial Chemistry**

By the end of this Course students should be able to know about:

CO1. The students will be able to discuss mechanism sugar industry.

CO2. The students will be able to understand the manufacturing of heavy chemical processes and their applications.

CO3. Students will understand and learn the classification, synthesis and applications of various polymers

CO4. Understanding the petroleum Industry, fuels and need of use of ecofriendly fuels.

CO5. The students will be able to discuss about nanotechnology including classification, optical properties, synthesis routes, characterization techniques and applications of nano-materials.

**HEAD**  
**The Department of Chemistry**  
**KRISHNA MAHAVIDYALAYA**  
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**PRINCIPAL**  
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