

Title of the Paper: Physical Chemistry and Organic Chemistry

Paper Code: CHC 102

Subject: DSC Chemistry

1) Name of the Teacher: **Dr. Apurva Anand Narvekar**

Designation: Assistant Professor

Programme: Bachelor of Science

Academic Year: 2020-2021

Semester: II

Class: F.Y. BSc (A, B and C)

Course objective: Is to learn basics of thermodynamics, concept of standard state and enthalpies of formation, bond energy calculations, Kirchoff's equation, Third law of thermodynamics and calculating absolute entropy.

Course learning outcome: Students will learn laws of thermodynamics, calculations of thermodynamic parameters like enthalpy, entropy etc., bond dissociation energy, resonance energy, Kirchoff's equation.

2) Name of the Teacher: **Ms. Sunita Mangesh Rathod**

Designation: Assistant Professor

Programme: Bachelor of Science

Academic Year: 2020-2021

Semester: II

Class: FYBSc (A, B and C)

Course objective:

- To understand the basics of physical chemistry.
- To solve problems in physical chemistry.

Course learning outcome:

At the end of this course students will be able to:

- Apply Le Chatelier's principle to reversible reactions.
- Differentiate between strong, moderate and weak electrolytes.

- Calculate hydrolysis constant, degree of hydrolysis and pH for different salts.
- Prepare buffer solutions.

3) Name of the Teacher: Ms. Saniksha S. Naik

Designation: Assistant Professor

Programme: Bachelor of Science

Academic Year: 2020-2021

Semester: II

Class: FYBSc (A, B and C)

Course Objective:

1. To understand the basics of Aromatic Hydrocarbons; its preparation & reactions.
2. To understand the basics of Halo compounds (alkyl & aryl halides); its preparations & reactions.

Course learning outcome:

- 1) Recognize and Identification of Benzene, alkyl benzene, alkyl & Aryl halides compounds.
- 2) To carry out the preparations of Benzene & alkyl benzene alkyl & Aryl halides compounds.
- 3) Be able to outline the completed electrophilic aromatic substitution reactions of Benzene & alkyl benzene compounds of the following types: halogenation, nitration, sulfonation, and Friedel-Crafts acylation & alkylation.
- 4) Recognise the structures and classifications of alkyl & aryl halides.
- 5) Explains the different methods of preparations of Halo- compounds.
- 6) Illustrates the reactions of Halo- compounds; Nucleophilic Substitution reactions (SN1, SN2, SNi), Elimination reactions.
- 7) Tells the effects of -NO_2 substituent on the aryl halides.
- 8) Cities the order of reactivity & strength of C-X bond.

4) Name of the Teacher: Ms. Harsha Arun Achari

Designation: Assistant Professor
Programme: Bachelor of Science
Academic Year: 2020-2021
Semester: II
Class: FYBSc (A, B and C)

Course Objective:

To learn reactions shown by different organic compounds such as Alcohols, Phenols, Ethers and carbonyl compounds- Aldehydes and Ketones and their preparations, certain name reactions for their synthesis

Course learning outcome:

Student will be able to,

- Understand the different methods for preparation of alcohols, ethers, phenols and carbonyl compounds
- Predict the products of name reactions used for preparation.
- Give examples of reactions shown by alcohols, ethers, phenols and carbonyl compounds
- Cite reagents required for synthesis, oxidation and reduction reactions.

Title of the Paper: Physical Chemistry and Inorganic Chemistry

Paper Code: CHC104

Subject: DSC Chemistry

1) Name of the Teacher: **Dr.Rajashri Mordekar**

2) Name of the Teacher: **Dr.Prajakta Parab**

3) Name of the Teacher: **Dr. Prajyoti P. Gauns Dessai**

Designation: Assistant Professor (Contract Basis)

Programme: Bachelor of Science

Academic Year: 2020-2021

Semester: IV

Class: S.Y.B.Sc. (A and B)

Course objective:

- To get an insight into transition elements, lanthanides and actinides.
- Their general characteristics.
- Understand the chemistry behind the different properties of this elements.
- Understanding the stability of coordination compounds using crystal field theory

Course learning outcome:

- Students will learn the different properties of transition elements , lanthanides and actinides.
- They will understand the chemistry behind this elements because of it , they exhibit different properties.
- They will understand why certain complexes are stable and why certain are not.

4) Name of the Teacher: **Ms. Madhuri Mahesh Naik**

Designation: Assistant Professor chemistry

Programme: Bachelor of Science

Academic Year: 2020-2021

Semester:IV

Class: SY BSc. (A and B)

Course objective:

To understand the key features of coordination compounds including : electronic configuration, oxidation state, coordination number, Logan's, variety of structures, inner and outer orbital complexes, isomerism, etc.

Use of crystal field theory to understand the magnetic properties, splitting of orbitals, calculation of CFSE

Course learning outcome:

To be able to describe the shape and structure of the complexes, to recognize the isomerism and name different types of coordination complexes, to be able to use CFT for calculating CFSE and its magnetic properties

Title of the Paper: Physical Chemistry

Paper Code: CHC-108

Subject: Chemistry

Name of the Teacher: 1) **Dr. Rajashri Mordekar**

Name of the Teacher: 2) **Dr. Prajakta Parab**

Name of the Teacher: 3) **Dr. Apurva Anand Narvekar**

Designation: Assistant Professor

Programme: Bachelor of Science

Academic Year: 2020-2021

Semester: VI

Class: T.Y. BSc

Course objective: Is to learn basics of quantum mechanics and setting up of Schrödinger equation for hydrogen atom, hydrogen like ions and many-electron atoms, Variational Method to approximately calculate the energy levels of difficult quantum systems and Chemical bonding

Course learning outcome: Students will learn to set up of Schrödinger equation for hydrogen atom, hydrogen like ions and many-electron atoms, calculate average and most probable distances of electron from nucleus, variation theorem and chemical bonding.

Title of the Paper: Inorganic Chemistry

Paper Code: CHC 109

Subject: Chemistry

Name of the Teacher: **1) Dr. Prajyoti Gauns Dessai**
2) Ms. Unnati Ulhas Sinari

Designation: Assistant Professor of Chemistry

Programme: Bachelor of Science

Academic Year: 2020-2021

Semester: VI

Class: TYBSc

Course objective:

1. To make a student understand about the organometallic chemistry.
2. Students will gain knowledge with respect to different metal carbonyl.
3. To give the insight into complex structure like ferrocene.
4. To learn about the electronic spectra of transition metal complexes.
5. And to understand the magnetic properties of this complexes.
6. To make understand Reaction Kinetics and mechanism for Coordination Compounds.
7. To provide knowledge on Acids, Bases and Non-aqueous Solvents.
8. To have a concept of the reactions that can be carried out in non-aqueous media
9. To make them understand the Symmetry and Term Symbols

Course learning outcome:

1. Students will learn about the different organometallic compounds of practical use.
2. Their preparation, properties and reactions will be understood.
3. They will also have an understanding with respect to the electronic spectra of transition metals.
4. They will learn to calculate ground states.
5. They will understand the magnetic properties of transition elements along with the determination of it.

Students will be able to

1. Recognize acid and base wrt different concepts.
2. Complete the reaction between acid and base.
3. Recognize the relationship between acid and conjugate base, and base and conjugate acid.
4. Classify different types of non-aqueous solvents.
5. Learns about physical properties and acid base reaction of liquid Ammonia, liquid SO₂ and HF.

6. Learns about inert and labile complexes and factors affecting it.
7. Understands reaction mechanism and its classification
8. Understand and explain application of trans effect.
9. Know the symmetry element and the symmetry operations.
10. Identify the point group in various common inorganic molecules.

Title of the Paper: Organic Chemistry

Paper Code: CHC110

Subject: DSC- Chemistry

1) Name of the Teacher: **Ms. Saniksha S. Naik**

Designation: Assistant Professor

Programme: Bachelor of Science

Academic Year: 2020-2021

Semester: VI

Class: T.Y. BSc

Course objective:

- 1) To understand the basics of formation of C-C bond via enolate chemistry.
- 2) To learn and apply various concepts such as stereochemistry and fundamental principles of stereoselectivity in organic chemistry.
- 3) To understand the Carbohydrate Chemistry

Course learning outcome:

- 1) know how to use the enol tautomer of a ketone as a nucleophile;
- 2) be able to choose an appropriate base to form an enolate and relate this choice to the pKa value of the α -C-H in the carbonyl compound;
- 3) be able to use the ethylacetoacetate in the reaction for the synthesis of ketones.
- 4) be able to use the ethylacetoacetate in the reaction for the synthesis of carboxylic acids.
- 5) be able to understand the alkylation using dithianes & enamine.
- 6) appreciate the importance of enolate chemistry in C-C bond formation.
- 7) Describe the structure and function of carbohydrates.
- 8) Determination of ring size of glucose.
- 9) Gives the open chain reactions of sucrose
- 10) Provide evidence for the presence of glucose & fructose units in sucrose.
- 11) able to understand the difference between stereoselective & stereospecific reactions with examples.
- 12) explain the types of substitution reaction mechanism (SN1, SN2, SNi)
- 13) explain the types of elimination reaction mechanism (E1, E2, E1cb)

2) Name of the Teacher: **Ms. Harsha Arun Achari**

Designation: Assistant Professor

Programme: Bachelor of Science

Academic Year: 2020-2021

Semester: VI

Class: T.Y. BSc

Course objective:

To gain knowledge about Terpenes

Course learning outcome:

Student will know

- The structural elucidation reactions for terpenes such as Citral, Camphor, alpha-Pinene, alpha-Terpineol,
- The methods of synthesis and commercial applications.
- Spectroscopic methods used for analysis of structure of terpenes under study.