Maratha Vidya Prasarak Samaj's

Arts, Science and Commerece College, Ozar (MIG)

Course Outcomes

Name of the department: Chemistry
Semester-I

Class	Name of the Course: Semester (Paper):	Name of the Teacher	Outcomes
T.Y.B.Sc	Physical Chemistry	Miss .C.B.Pawar	1 . Basic concept of physical chemistry. Methods to determine order of reaction, Arrhenius equation, and graphical evaluation of energy of activation. 2. Principle and applications of rotational, vibrational, raman and electronic spectroscopy. 3. Familiar with phase rule, phase diagram of one and two component systems. 4. Reversible and irreversible cells,EMF and its measurements,Standard cells, cell reaction and EMF and its calculations. 5. Nucear reactions, types , their methods of determination. 6. Quantum Mechanics, Schrodinger equations, wave particle duality.
T.Y.B.Sc	Inorganic Chemistry	Prof.H.D.Kale	1. The theories of covalent bond formation, 2. the principles of various theories of bonding like Sidgwick model, Werner's theory VBT,CFT, MOT. 3.The principles of isomerism, nomenclature and structures of inorganic complexes . 4. F-block elements,inner transition elements, Lanthanides, Actinides. 5.Meaning of metal, conductor, semiconductor, metallic bond on the

			basis of band theory. 6.Catalysts, types of catalytic reactions Biological role of inorganic ions and compounds.
T.Y.B.Sc	Organic Chemistry	Prof. N.T.Date	1. Concepts like acidity, basicity of organic molecules, electrophile, nucleophile and good and bad leaving groups. 2. Introduced with stereochemistry of disubstituted cyclohexane. 3. Understand mechanism of organic reaction. Arrow drawing concept which is important part of reaction mechanism is explained thoroughly in this course. 4. Different types of organic reactions and also they can understand reactivity profile of organic molecules. 5. Introduction to spectroscopy and there applications 6. Rarrangement reactions
T.Y.B.Sc	Analytical Chemistry	Smt.B.L.Ugale	1. Quantitative chemical analysis using the techniques like gravimetry, thermal methods of analysis and its applications. 2.Instrumental Techniques like polarography, AAS, FES and spectrophotometer at the levels of macro, micro and trace analysis of metals and non-metals from industrial and natural samples. 3. Applications of AAS and FES, types of detector 4.Differntial methods of analysis
T.Y.B.Sc	Industrial Chemistry	Prof. A.M.Bhagare	1.Use of agrochemicals like pesticide, insecticides, fungicides, fertilizers and their environmental impact. 2.Study of food industry makes them aware of food adulteration, storage and processing of food. 3.This course also provides opportunity to study agrochemicals, food chemicals on industrial scale. 4.Manufacturing of basic chemicals such as Ammonia, Sulphuric acid and Nitric acid. Syllabus further comprises 5.Petrochemicals and eco- friendly

			fuels, where in students study processing of petrochemical fuels, properties of fuels and applications of fuels,non conventional energy.
T.Y.B.Sc	Agriculture Chemistry	Smt .B.L Ugale	1. The role of agriculture chemistry and its potential 2. Basic concept of soil, properties of soil and its classification on the basis of pH 3. Quality irrigation water, water quality standard and analysis of water 4. The different plant nutrients, their functions and deficiency symptoms ,understand importance of manures as compared to chemical fertilizers. 5. Techniques to protect the plants and the knowledge of various pesticides, insecticides, fungicides and herbicides 6. The problematic soil and recommend method for their reclamation
S.Y.B.Sc	Physical and Analytical Chemistry	Miss .C.B. Pawar	1. Concept of kinetics , terms used , rate laws , types of order . 2. Photochemistry, photochemical aand thermal reactions. 3. Distribution law , solvent extraction and its applications. 4. Analytical chemistry in which they are made aware of inorganic qualitative analysis and analysis of organic compounds (Qualitative and Quantitative). 5. Along with it they also study error in quantitative analysis and ways to minimize them.
S.Y.B.Sc	Organic and Inorganic Chemistry	Prof.N.T.Date	1.Stereochemistry of different stereo isomers 2.Organic reaction mechanism in which they study different types of reagents, reactions and their mechanisms. 3.Differentiate between ore and minerals, calcinations and roasting. 4.Basic principles of metallurgy to understand chemical reactions and processes occurred in metallurgy. 5.The corrosion and passivity, their

			types,their types, theories and methods of prevention.
F.Y.B.Sc	Physical and Inorganic Chemistry	Miss .C.B. Pawar	1.To understand basic laws regarding states of matter, surface chemistry, thermodynamics and structure of atom. 2.Enable to solve problems regarding van der Waal's equation and Critical constant and regarding P-V-T relations. 3.Students also made aware about adsorption , catalysis and their applications. 4.This course also strengthens mathematical background required for derivations, depictions and problem solving. 5.This course helps to understand the concept of oxidation & reduction, oxidizing agent, reducing agent, redox reaction, oxidation number, 6.Balance the equation by ion electron method & oxidation number method. 7.Students are also made aware of mole concept, derivations, depictions and problem solving . 8. periodic properties of the elements including the preliminary theories of bonding, concept of hybridization, geometry and effect of lone pairs with examples.
F.Y.B.Sc	Organic and Inorganic Chemistry	Prof. A.M.Bhagre	1.fundamental concepts of organic and inorganic chemistry which governs the structure, bonding, properties, 2. structural effects, acid-base theories, preparation methods, reactivity and stereochemistry of organic molecules. 3.IUPAC names of hydrocarbons , different functional group compounds and metods of preparation and reactivities. 4.Concept of isomerism, types of isomers and representation of organic molecules. 5.periodic table, periodic properties of s and p block elements.

			6.Quantum numbers, Aufbau's Paulin's exclusion principle and Hunds rule.

Semester-II

Class	Name of the Course: Semester (Paper):	Name of the Teacher	Outcomes
T.Y.B.Sc	Physical Chemistry	Miss .C.B.Pawar	1. Crystal structure and Quantum Chemistry. 2. Nuclear chemistry, nuclear reactions, types and measurement techniques. 3. Thermodynamics and EMF, Chemical cell with and without transfer, application of EMF measurement such as pH determination, determination of solubility and solubility product. Basic elements of quantum chemistry are also introduced.
T.Y.B.Sc	Inorganic Chemistry	Prof.H.D.Kale	1. F-block elements,inner transition elements, Lanthanides, Actinides. 2. Meaning of metal, conductor, semiconductor, metallic bond on the basis of band theory. 3. Catalysts, types of catalytic reactions 4. Biological role of inorganic ions and compounds.
T.Y.B.Sc	Organic Chemistry	Prof. N.T.Date	1. Students are introduced with carbanions and their reactions. 2. Retrosynthetic analysis , types and its examples. 3. Rearrangement reactions are introduced with mechanistic approach. 4. Spectroscopic techniques like PMR, U.V. and I.R. are introduced. Students learned to differentiate organic compounds with the help of these spectroscopic techniques

T.Y.B.Sc	Analytical Chemistry	Smt.B.L.Ugale	1. Students are introduced with carbanions and their reactions. 2.Retrosynthetic analysis , types and its examples. 3.Rearrangement reactions are introduced with mechanistic approach. 4. Spectroscopic techniques like PMR, U.V. and I.R. are introduced. Students learned to differentiate organic compounds with the help of these spectroscopic techniques.
T.Y.B.Sc	Industrial Chemistry	Prof. A.M.Bhagare	1.Technique of separation, identification of purification using chromatographic techniques like TLC,GC,HPLC, electrophoresis etc . 2. This knowledge enables them to be good analytical of Quality control chemist in various fields. 3. Solvent extractions and there applications
T.Y.B.Sc	Dairy Chemistry	Smt .B.L Ugale	1.Importance of the subject from the point of rural economy. 2.The composition of milk, its food & nutritive value 3.The Microbiology of the milk 4.Various preservation and adulterants, various milk proteins and their role for the human body. 5.Various milk products, their composition, manufacture and uses.
S.Y.B.Sc	Physical and Analytical Chemistry	Miss .C.B. Pawar	1.Concepts of Helmholtz free energy & Gibbs free energy as well as free energy of chemical reactions & physical transformation. 2.Study different modes of concentration , distillation of solutions of liquid in liquid , partially immiscible liquids & distillation of immiscible liquids. 3.Meaning of equivalent weight, molecular weight, normality, molality, primary and secondary standards. 4.Volumetric analysis wherein they study non-instrumental volumetric

			analysis which comprises of study of various titrations, indicators used in it & some theoretical aspects related with titrations.
S.Y.B.Sc	Organic and Inorganic Chemistry	Prof. N.T.Date	1. Various biomolecules, their role & structural aspects. 2. Different oxidizing and reducing reagents, their selectivity to different substrates, heterocycles, their preparation & reactions. 3. Organometallic chemistry & use of organometallic compounds in synthesis of organic as well as inorganic compounds. 4. Chemical toxicology to know adverse effects of chemicals.
F.Y.B.Sc	Chemistry practical	Miss .B.L.Ugale	1. Students are trained to determine the rate constant of chemical reactions, heat of solution , heat of neutralization, critical solution temperature of partially miscible system & distribution coefficient. 2. Students are trained for quantitative analysis of different samples such as Na_2CO_3 in washing soda, Aspirin in APC tablet, Aluminium in Alum, strength of H_2O_2, Copper in Brass & iodimetric methods. 3. Students are trained for organic & inorganic qualitative analysis. 4. They are also trained for preparation of organic compounds & chromatographic techniques like TLC
S.Y.B.Sc	Chemistry practical	Prof.A.M.Bhagare	1. Students are trained to determine the rate constant of chemical reactions, heat of solution , heat of neutralization, critical solution temperature of partially miscible system & distribution coefficient. 2. Students are trained for quantitative analysis of different samples such as Na_2CO_3 in washing soda, Aspirin in APC tablet, Aluminium in Alum, strength of H_2O_2, Copper in Brass & iodimetric methods. 3. Students are trained for organic

			& inorganic qualitative analysis. 4.They are also trained for preparation of organic compounds & chromatographic techniques like TLC.
T.Y.B.Sc	Chemistry practical	Prof. N.T.Date	1.Students are trained in the techniques such as pH metry, Conductometry, Potentiometry, Colorimetry, Spectrophotometry, Refractometry etc. 2.They learn to use these techniques in order to understand various chemical reactions. 3.Students are trained in the Inorganic Qualitative Analysis of different mixtures of inorganic compounds. 4.Separation of the metal ions using chromatographic techniques and inorganic quantitative analysis using the techniques of gravimetry, volumetry, colorimetry. 5.Students are trained in separation of binary mixtures, preparation of different derivatives and estimation of some components. 6.It helps in development of practical skills of the students & understanding the importance of chemical safety and also explains the factors affecting reaction outcomes and yields.

Head

Department of Chemistry