Vivekanand College, Kolhapur (Autonomous)

Syllabus Completion Report

Academic Year - 2021-22

Sem-I, Sem-III, Sem-V

Department - Chemistry

Name of the Teacher – **Dr. S. S. Ankushrao**

Name of the Class	Units Allotted	Units Completed	Remark
B.Sc.I (Div-A)	▪ Chemical Bonding and Molecular structure -Ionic Bonding ▪ Chemical Bonding and Molecular structure- Valence bond theory (VBT)	▪ Chemical Bonding and Molecular structure - Ionic Bonding ▪ Chemical Bonding and Molecular structure- Valence bond theory (VBT)	Completed
B.Sc.I (Div- B)	▪ Chemical Bonding and Molecular structure -Ionic Bonding ▪ Chemical Bonding and Molecular structure- Valence bond theory (VBT)	▪ Chemical Bonding and Molecular structure - Ionic Bonding ▪ Chemical Bonding and Molecular structure- Valence bond theory (VBT)	Completed
B.Sc.I (Div-C)	▪ Chemical Bonding and Molecular structure -Ionic Bonding ▪ Chemical Bonding and Molecular structure- Valence bond theory (VBT)	▪ Chemical Bonding and Molecular structure - Ionic Bonding ▪ Chemical Bonding and Molecular structure- Valence bond theory (VBT)	Completed
B.Sc.II	-	-	-
B.Sc.III	▪ Bio-Inorganic Chemistry ▪ Titrimetric Analysis	▪ Bio-Inorganic Chemistry ▪ Titrimetric Analysis	Completed
M.Sc.I	▪ Introduction to Quality Control and quality assurance	▪ Introduction to Quality Control and quality assurance	Completed
M.Sc.II	▪ Proton NMR Spectroscopy	▪ Proton NMR Spectroscopy	Completed

Dr. S. S. Ankushrao

Dr. Mrs. S. D. Shirke

Head
Dept. of Chemistry
Vivekanand College, Kolhapur

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Syllabus completion report 2021-22

Teacher Name: Dr. Mrs. S. D. Shirke

Class	Subject	Total Units	Completed Units	Remaining Units
B.Sc. I (Sem I)	DSC-1002A Inorganic and Organic Chemistry	**2**	**Unit I: Stereochemistry of Organic Chemistry** Introduction, Stereoisomerism – Optical isomerism, Chirality, Enantiomers and diastereoisomerism, Elements of Symmetry-Plane, center and alternating axis of symmetry, Optical isomerism in 2,3 dihydroxybutanoic acid, Tartaric acid and chlorobutanoic acid, Geometrical isomerism – maleic acid and Fumaric acid, Geometrical Isomerism : In olefins, Oximes and alicyclic compounds. R and S Nomenclature, E and Z Nomenclature, Conformational isomerism in Ethane, n-Butane and Cyclohexane **Unit II: Aromaticity :** Definition, , Conditions for aromaticity, Classification of aromatic compounds- Aromatic, Nonaromatic, Antiaromatic and Pseudoaromatic compounds. .MOT and VBT for structure of Benzene. Electrophilic Substitution Reactions …Nitration, Sulphonation, Halogenation and Friedal Craft's Alkylation and Acylation	**NIL**
(Sem II)	No organic chemistry paper		No Organic Chemistry Paper in SEM-II	

M.Sc.II **Sem- I**	Applied Organic Chemistry	**1**	Paper-Advanced Synthetic methods – Unit : Use of following in the synthesis . Introduction, Use of Merrifield Resin in Polypeptide synthesis – Structure, Preparation of Merrifield resin Its use in synthesis of polypeptide ii) Use of Ionic Liquids –Definition, Examples, structures, Nomenclature Applications of Ionic liquids and Reactions in presence of Ionic liquid. iii) Use of Microwaves in synthesis – Introduction, Principle, requirements Microwave assisted Reactions in aqueous medium, organic medium iv) Multicomponent Reactions Reactions in Microwave Oven - In presence of solid support, vi)Ultrasound waves and vii)Electroorganic synthesis.(some extra lectures are required to complete the syllabus)	**NIL**
MSc.-II **Sem- II**	Agrochemicals	**1**	Introduction - Classification of pesticides.- i) Carbamates, – Carbofuran, carbaryl, Baygon,aldicarb and Malathion-structure synthesis and Applications .ii) Organophosphorous insecticides – monocrotophos, Ethophan, Phorate, chloropyriphos and mevinphos. iii)Natural and synthetic Pyrethroids- Defination,, Composition of natural pyrithroids , structures and properties . iv) Synthetic pyrethroids - synthesis and,applications v) Juvenile Hormones- Defination, Types of JH, structures and applications.(Extra lectures are conducted to complete the syllabus.)PGR- Indole-3-acetic acid, Giberellin etc.structure and their applications.	**NIL**

Dr. Mrs. S. D. Shirke

(Assistant Professor)

VIVEKANAND COLLEGE KOLHAPUR-416003. ESTD. JUNE 1964

Dr. Mrs. S. D. Shirke

(Head of Dept.)

Head
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Vivekanand College, Kolhapur (Autonomous)

Syllabus Completion Report

Academic Year - 2021-22

Sem-II, Sem-IV, Sem-VI

Department - Chemistry

Name of the Teacher – **Dr. S. S. Ankushrao**

Name of the Class	Units Allotted	Units Completed	Remark
B.Sc.I (Div-A)	▪ Chemical Energetics	▪ Chemical Energetics	Completed
B.Sc.I (Div- B)	▪ Chemical Energetics	▪ Chemical Energetics	Completed
B.Sc.I (Div-C)	▪ Chemical Energetics	▪ Chemical Energetics	Completed
B.Sc.II	▪ Crystal Field Theory	▪ Crystal Field Theory	Completed
B.Sc.III	▪ Corrosion and Passivity ▪ Introduction to Chemical Industry	▪ Corrosion and Passivity ▪ Introduction to Chemical Industry	Completed
M.Sc.I	▪ Thermal Analysis	▪ Thermal Analysis	Completed
M.Sc.II	▪ Dyes and Intermediates	▪ Dyes and Intermediates	Completed

Dr. S. S. Ankushrao

Dr. Mrs. S. D. Shirke

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Vivekanand College, Kolhapur (Autonomous)

Syllabus Completion Report

Academic Year - 2021-22

Sem-I, Sem-III, Sem-V

Department - Chemistry

Name of the Teacher – **Dr. A. S. Tapase**

Name of the Class	Units Allotted	Units Completed	Remark
B.Sc.I	-	-	-
B.Sc.II	▪ Electrochemistry	▪ Electrochemistry	Completed
B.Sc.III	Quantum Theory	▪ QuantumTheory	Completed
M.Sc.I	▪ Molecular Spectroscopy	▪ Molecular Spectroscopy	Completed

A.S.Tapase

Dr. A. S. Tapase

KOLHAPUR-416003 * VIVEKANAND COLLEGE * ESTD. JUNE 1964

Dr. Mrs. S. D. Shirke

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Vivekanand College, Kolhapur (Autonomous)

Syllabus Completion Report for Academic Year - 2021-22

Sem. I, III

Department- Chemistry

Name of the Teacher – **Mr.S.C.Kumbhar**

Class	Unit Allotted	Subject Code	Units Completed	Remark
M.Sc.I	a) Chemistry of transition elements b) Bioinorganic Chemistry	CC-1131A	General characteristic and properties of transition elements, co-ordination chemistry of transition metal ions, stereochemistry of coordination compounds, crystal field theory, crystal field splitting of d orbital's for octahedral, tetrahedral, square planar and square pyramidal complexes, crystal field stabilisation energy (CFSE), factors affecting the crystal field parameters, strong and weak field complexes, spectrochemical series, Jahn- Teller effect, Interpretation of electronic spectra through d-d spectra and charge transfer spectra, nephelauxetic series, metal clusters, sandwich compounds, metal carbonyls. b) Role of metal ions in biological processes, structure and properties of metalloproteins in electron transport processes, cytochromes, ferrodoxins and iron sulphur proteins, metal ion transport and storage: Ionophores and ion pumps, transferrin and ferritin, Biological nitrogen fixation, PS-I, PS -II, Oxygen uptake proteins, metal complexes in medicines.	Nil
M.Sc.I	a) Stereochemistry and Bonding in main group compounds b) Metal ligand equilibria in solution	CC-1131A	VSEPR theory and drawbacks, bond length, bond angles, bond energies and resonance, Pπ–Pπ and Pπ–dπ bonds, Bent rule, walsh diagram, Back bonding, some simple reactions of covalently bonded molecules (atomic inversion, Berry pseudorotation, nucleophilic displacement and free radical reaction). b) Definition of stability constant, step wise and overall formation constant and their interaction, trends in stepwise constants, factors affecting the stability of metal complexes with reference to the nature of metal ion and ligand, chelate effect, ternary complexes and factors affecting their stabilities, stability of metal complexes of crown ether, Determination of stability	Nil

			constant for binary complexes using pH-metric (Bjerrums method) and spectrophotometric (Job's and mole ratio) techniques.	
M.Sc.I	a) Elimination Reactions b) Study of Following reaction	CC-1132A	The E1, E2 and E1cB mechanisms. Orientation in Elimination reactions. Hofmann versus Saytzeff elimination, Pyrolytic syn-elimination, competition between substitution and elimination reactions, Reactivity: effects of substrate structures, attacking base, the leaving group, the nature of medium on elimination reactions. Pyrolytic elimination reactions. Schmidt, Curtius, Lossen, Prins, Orton, Hofmann-Martius, Mitsunobu and Baylis- Hillmann reaction, Arndt-Eistert, Biginelli, Duff, Darzen.	Nil
M.Sc.II	Study of Following reaction	CC-1143C	Mechanism, Stereochemistry, migratory aptitude and applications of Dienone–phenol, Favorskii, Wolff, Smile's, Brook, Neber, Stevens, Sommelet–Hauser rearrangement, Eschenmoser fragmentation, von Richter reaction, Epoxide rearrangement with lewis acid.	Nil
M.Sc.II	Photochemistry	CC-1143C	Effect of light intensity on the rate of photochemical reactions, Types of photochemical reactions, phtodissociation gas phase photolysis, photochemistry of alkynes, intramolecular reactions of the olefinic bonds, geometrical isomerism, cyclisation reactions, rearragements of 1,4 and 1,5-dienes, photochemistry of carbonyl compounds, intramolecular reactions of carbonyl compounds saturated cyclic and acyclic α, β-unsaturated compounds, cyclohexadienones, intermolecular cycloaddition reactions, dimerisation and oxitane formation, photochemistry of aromatic compounds, photo fries reactions of anilides, photo fries rearrangements, Singlet molecular oxygen reactions, photochemistry of vision	Nil
M.Sc. I	Organic chemistry Practicals	CPP-1135A	a) One Step Organic Praparation b) Estimation	Nil

Mr.S.C.Kumbhar

VIVEKANAND COLLEGE KOLHAPUR-416003. ESTD. JUNE 1964

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Vivekanand College, Kolhapur (Autonomous)
Syllabus Completion Report for Academic Year - 2021-22
Sem. II, IV
Department- Chemistry
Name of the Teacher – **Mr.S.C.Kumbhar**

Class	Unit Allotted	Subject Code	Units Completed	Remark
M.Sc. I	a) Organometallic Chemistry of transition elements b) Reaction mechanism of transition metal complexes	CC-1137B	a) Ligand hapticity, electron count for different types of organometallic compounds, 18 and 16 electron rule exceptions, synthesis, structure and bonding, organometallic reagents in organic synthesis and in homogeneous catalytic reactions (Hydrogenation, hydroformylation, isomerisation and polymerisation), pi metal complexes. b) Classification of inorganic reactions, ligand substitution reaction and their mechanisms of octahedral complexes, Acid hydrolysis, factors affecting the acid hydrolysis, Base hydrolysis, square planar complexes, trans effect, Electron transfer reaction: mechanism of inner and outer sphere electron transfer reactions in octahedral complexes..	Nil
M.Sc. I	a) Spectroscopic term symbols b) Nuclear and radiochemistry	CC-1137B	a)Terms, Inter-electronics repulsion, spin orbit coupling, ground terms, determination of terms symbol of d1 to d5 Configuration / complexes, Energy ordering of terms, microstates, Weakand stronger field approach, Orgel diagram of d1 to d9 configuration in an octahedral andtetrahedral environments, Correlation diagram of d1, d2, d8 and d9configuration in octahedraland tetrahedral environments, non crossing rule. b) Nuclear stability and nuclear binding energy, radioactivity and radioactive decay, radioactive equilibrium, classification of nuclear reactions, Q value, nuclear reaction cross-sections,nuclear fission, nuclear fusion, applications of radioactivity.	Nil
M.Sc. II	Free radical reactions	CC-1149D	Types of free radical reactions, detection by ESR, free radical substitution mechanism, mechanism at an aromatic substrate, neighboring group assistance. Reactivity for aliphatic and aromatic substrates at a bridgehead. Reactivity in attacking radicals. The effect of solvent on reactivity. Allylic hydrogenation (NBS), oxidation of aldehydes to carboxylic acids, auto oxidation, coupling of alkynes and arylation of aromatic compounds by diazonium salt, Sandmeyers reaction. Free radical rearrangement, Hunsdiecker reaction.	Nil
M.Sc. II	a) Kinetic and thermodynamic control of reactions b)Non Classical Carbocation	CC-1149D	a)Nitration and Sulphonation of naphthalene, Wittig, Enolization, Friedel-Crafts and Diels Alder reactions. b)Formation, stability, reactivity and synthetic applications.	Nil

M.Sc. II	a)Steroids b) Prostaglandins	CC-1151D	a)Occurrence, nomenclature, basic skeleton, Diels hydrocarbon. Study of the following Hormones: Cholesterol, Androsterone, Testosterone, Estrone, Progesterone, Aldosterone and Cortisone (only synthesis). b) Occurrence, nomenclature, classification, biogenesis and physiological effects, Synthesis of PGE2 and PGF2	Nil
M.Sc. II	Organic chemistry Practicals	CPP-1141B	Binary Mixture Analysis	Nil

Mr.S.C.Kumbhar

VIVEKANAND COLLEGE ESTD. JUNE 1984 KOLHAPUR-416003

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Syllabus Completion Report for Academic Year - 2021-22

Sem. I, III

Department- Chemistry

Name of the Teacher – **Dr.A. A PATRAVALE**

Class	Unit Allotted	Subject Code	Units Completed	Remark
M.Sc.I	a) Reaction Mechanism: Structure and Reactivity b) Aliphatic Nucleophilic substitutions	CC-1132A	a) Reaction Mechanism: Structure and Reactivity: Generation, structure, stability and reactivity of carbocations and carbanions, free radicals, arynes, carbenes, N-heterocylcic carbene, nitrenes and Nitrogen, sulphur and phosphorus ylides. b) b) Aliphatic Nucleophilic substitutions The SN 2 , SN1 and SNi reactions with respects to mechanism and stereochemistry. Nucleophilic substitutions at an allylic, aliphatic trigonal, benzylic, aryl and vinylic carbons. Reactivity effect of substrate structure, effect of attacking nucleophiles, leaving groups and reaction medium. SN reactions at bridge head carbon, competition between SN1 and SN2 Ambident nucleophiles, Neighbouring Group Participation	Nil
M.Sc.I	a) a) Aromatic Electrophilic Substitutions b) Non benzenoid aromatic Compounds	CC-1132A	a) Aromatic Electrophilic Substitutions Introduction, the arenium ion mechanism, orientation and reactivity in Nitration, Sulphonation, Friedel-Crafts and Halogenation in aromatic systems, energy profile diagrams. The ortho/para ratio, ipso attack, concept of aromaticity, orientation in their ring systems. Diazo-coupling, Vilsmeir Haak reaction, Von Richter rearrangement. Nucleophilic aromatic substitution reactions SN1, SN2 b) Non benzenoid aromatic Compounds Aromaticity in Non- benzenoids compounds Annulenes and heteroannulenes, fullerence C60, tropone, tropolone, azulene, fulvene, tropylium salts, ferrocene.	Nil
M.Sc.II	a) Drug design b) Study of Antibiotics	CC-1146A	Development of new drugs, procedures followed in drug design. History and development of Quantitative structure activity relationship (QSAR). Concepts of drug receptors, Relation of chemical structure and chemical activity. Introduction, β-lactum Antibiotics, cephalosporin Antibiotics, SAR of β-lactum and cephalosporin, Structural features of tetracycline & macrocyclic antibiotics (no synthesis).	Nil
M.Sc.II	Study of the Following types of	CC-1146A	a) Antimalerials: Trimethoprim. b) Analgesic & Antipyretics: Paracetamol, Meperidine, methadone, Aminopyrine.	Nil

	drugs		c) Anti- inflammatory: Oxyphenylbutazone, Diclophenac, Indomethacin. d) Antitubercular & antileprotic: Dapsone e) Anaesthetics: Lidocaine, Thiopental. f) Antihistamines: Diphenylhydramine. g) Tranquilizers: Diazepam, Trimeprazine. h) Anti AIDS: General study Introduction, structure and life cycle of the AIDS virus, recent development, Azedothymidine (AZT) derivatives i) Cardiovascular: Synthesis of dilliazem, quinidine, methyldopa, atenolol, oxyprenol. j) Anti-neoplastic drugs: Introduction, Cancer chemotherapy, Synthesis of mechloraethamine, cyclophosphamide, Mephalan, uracils, mustards. Recent development in cancer chemotherapy. Hormones and natural products.	
M.Sc.II	a) Five membered Heterocycles b) Six membered Heterocycles with one heteroatom	CC-1143A	Synthesis and reactions of Furan, benzofurans, Pyrrol, benzopyrroles, Thiophene, Benzothiophenes. Synthesis and reactions of Pyridine, Quinoline, Coumarine,	Nil
M.Sc. I	Analytical chemistry Practicals	CPP-1136A	Estimation various compounds Analysis of Drugs Instrumental practical's	Nil

Dr. A. A. Patravale

VIVEKANAND COLLEGE KOLHAPUR-416003. ESTD. JUNE 1964

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Vivekanand College, Kolhapur (Autonomous)

Syllabus Completion Report for Academic Year - 2021-22

Sem. II, IV

Department- Chemistry

Name of the Teacher – **Dr. A. A. Patravale**

Class	Unit Allotted	Subject Code	Units Completed	Remark
M.Sc. I	a) Atomic absorption and Inductively coupled plasma (ICP) Spectroscopy b) Inductively Coupled Plasma Spectroscopy	CC-1140B	Atomic Absorption Spectroscopy (AAS) Introduction, Principal, difference between AAS and FES, Advantages of AAS over FES, advantages and disadvantages of AAS, Instrumentation, Single and double beam AAS, detection limit and sensitivity, Interferences, applications. Graphite furnace atomic absorption spectroscopy, general description, advantages and disadvantages. Flame photometry, Cold Vapor Mercury, Hydride Generation, Spark emission, challenges and limitations. Introduction, Nebulisation Torch, Plasma, Instrumentation, Interferences, and Applications. Problems: Simple problems based on AAS and ICP	Nil
M.Sc. II	a) Synthesis and applications of perfumery	CC-1152B	Introduction to perfumery compounds and its commercial process, essential oil, method of preparation and importants, synthesis of 2-Phenylethanol, Yara-yara, vanillin and other food flavours, synthetic musk, Jasmone, ionones, β-ionones from citral, phenyl acetic acid and its ester, benzyl acetate	Nil
M.Sc. II	Dyes and Intermediates	CC-1152B	Classification and synthesis of important dye intermediates by using nitration, sulphonation, diazotization reactions. Commercial processes for azo-dyes, reactive dyes, optical brighteners, thermal sensitive dyes, dispersed dyes and reactive dyes.	Nil
M.Sc. II	a) Benzenoid and Non benzenoid aromatic Compounds b) Non-classical carbocations: Formation, stability, reactivity	CC-149B	a) Polycyclic aromatic compounds: Synthesis, reactions, Linear and non-linear ortho fused polynuclear hydrocarbons. b) Introduction to Aromaticity and anti-aromaticity, Non- benzenoids compounds, Three and five membered carbocyclic compounds, Crown ether complexes, cyclodextrins, cryptands, catenanes and rotaxanes.	Nil

	and synthetic applications.			
M.Sc. I	a) Oxidation b) Hydroboration c) Enamines	CC-1140B	Oxidation of alcohol to aldehyde, ketone or acid: Jones reagent, Swern oxidation, Collins reagent, Fetizones reagent, PCC, PDC, IBX, Activated MnO2, Chromyl chloride (Etard reaction), TEMPO, NMO, Moffatt oxidation . Mechanism and Synthetic Applications Formation and reactivity of enamines	Nil
M.Sc. II	Analytical chemistry Practicals	CC -1142B	Estimation various compounds Analysis of Drugs Instrumental practical's	Nil

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VIVEKANAND COLLEGE KOLHAPUR-416003. ESTD. JUNE 1964

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SYLLABUS COMPLETION REPORT – DEPARTMENT OF CHEMISTRY
ACADEMIC YEAR 2021-22

Teacher Name: Dr. Mrs. S. D. Shinde				
Class	**Subject**	**Total Units**	**Completed Units**	**Remaining Units**
B.Sc. I (Sem I)	DSC-1002A Inorganic and Organic Chemistry	**2**	**Unit I: Atomic Structure and Periodicity of Elements** Introduction to atom, Bohr's theory of hydrogen atom and its limitations, Wave particle duality, Heisenberg uncertainty principle, Quantum numbers and their significance, Shapes of s, p and d atomic orbitals, Electrons filling rules in various orbitals: a) Aufbau's principle b) Hunds rule of maximum multiplicity c) Pauli's exclusion principle, Electronic configuration of elements, Periodicity General discussion of the following properties of the elements with reference to s block elements: a) electronic configuration b) atomic radii c) ionic radii d) ionization energy e) electron affinity f) electronegativity g) metallic characters h) reactivity i) oxidation state j) melting and boiling points, Chemical properties of the elements **Unit II: Chemical Bonding and Molecular structure (C) Molecular orbital theory (MOT)** Introduction: Atomic Orbital's and Molecular Orbital's, LCAO method, formation of bonding, antibonding and nonbonding molecular orbitals, conditions of successful overlap, Types of overlaps - S-S, S-Px, Px-Px, Py-Py/ Pz-Pz overlaps, Bond order and its significance, Energy level sequence for molecular orbital when n=1 & 2, MO diagrams for homonuclear diatomic molecules of 1st & 2nd period elements (He_2, Li_2, B_2, N_2, O_2), Molecular orbital diagrams for heteronuclear diatomic molecules. (CO, NO, NO^+)	**NIL**
B.Sc .II (Sem IV)	DSC-1002D Inorganic and Physical Chemistry	**2**	**Unit I: Lanthanoids and Actinoids** ***A] Lanthanoids:*** Introduction, electronic configurations, oxidation states, colour and spectra, magnetic properties, lanthanide contraction, occurrence and separation of lanthanides (ion exchange method only). ***B] Actinoids:*** Introduction, position in periodic table, electronic configuration, oxidation states; General methods of preparation of Transuranic elements- i) Neutron capture followed by β decay ii) Accelerated projectile bombardment iii) Heavy ion bombardment; IUPAC nomenclature of the super heavy elements with atomic number (Z) greater than 100. **Unit II: Valence Bond Theory [VBT]** Definition and formation of co-ordinate covalent bond in BF_3-NH_3 and $[NH_4]$*, Distinguish between double salt and complex salt, Werner's theory i) Postulates, ii) theory as applied to cobalt amines complexes; Description of the terms: ligands, co-ordination compounds, Coordination number; IUPAC system of nomenclature, Structural and stereoisomerism in complexes with coordination numbers 4 and 6; Postulates of VBT, Inner and outer orbital complexes w. r .t. coordination numbers 4 and 6; Drawbacks of VBT.	**NIL**
B.Sc. III (Sem V)	DSC-1002E1 (Physical and Inorganic Chemistry)	**3**	**Unit I: Metals, Semiconductors and Superconductors.** Introduction, Properties of metallic solids, Theories of bonding in metal. i) Free electron theory. ii) Molecular orbital theory (Band theory), Classification of solids as conductor, insulators and semiconductors on the basis of band theory, Semiconductors. Types of semiconductors - intrinsic and extrinsic semiconductors. Applications of semiconductors, Superconductors: Ceramic superconductors - Preparation and structures of mixed oxide $YBa_2Cu_3O_{7-x}$, Applications of superconductors.	**NIL**

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Syllabus Completion Report

Academic Year - 2021-22

Sem. I, III, V

Department- Chemistry

Name of the Teacher – **Dr. Undale K. A.**

Name of the Class	Units Allotted	Units Completed	Remark
B. Sc. I	1 practical batch every week	Completed	Completed
B. Sc. II	a) 2 practical batches every week	Completed	Completed
	b) Phase Equilibria	Phase Equilibria	Completed
	c) Solutions	Solutions	Completed
B. Sc. III	a) 1 Practical batch every week	Completed	Completed
	b) Chromatography	Chromatography	Completed
	c) Molecular Spectroscopy	Molecular Spectroscopy	Completed
M. Sc. II	Pericyclic Reactions	Pericyclic Reactions	Completed

Dr. Undale K. A.

VIVEKANAND COLLEGE * KOLHAPUR-416003. * ESTD. JUNE 1964

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Syllabus Completion Report

Academic Year - 2021-22

Sem. II, IV, VI

Department- Chemistry

Name of the Teacher – **Dr. Undale K. A.**

Name of the Class	Units Allotted	Units Completed	Remark
B. Sc. I	1 practical batch every week	Completed	Completed
	a) Chemical Equilibria	Chemical Equilibria	Completed
	b) Dairy Chemistry	Dairy Chemistry	Completed
B. Sc. II	a) 2 practical batches every week	Completed	Completed
B. Sc. III	a) 1 Practical batch every week	Completed	Completed
	b) Fermentation Industry	Fermentation Industry	Completed
	c) Renewable Energy	Renewable Energy	Completed
M. Sc. II	Newer Methods of Stereoselective Synthesis	Newer Methods of Stereoselective Synthesis	Completed

Dr. Undale K. A.

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Syllabus Completion Report for Academic Year - 2021-22

Sem. I, III

Department- Chemistry

Name of the Teacher – **Dr. D. S. Gaikwad**

Class	Unit Allotted	Subject Code	Units Completed	Remark
M.Sc. I	Stereochemistry	CC-1132A	Prochiral relationship, homotopic, enantiotopic and disteriotopic groups and faces. Recemic modifications and their resolution, Geometrical isomerism, R, S and E, Z nomenclature, Threo and Erythro isomers. Allenes and spiranes, Stereochemistry of the compounds containing Nitrogen, Sulphur and phosphorous. Conformational analysis: Cyclohexane derivatives, stability and reactivity, Conformational analysis of Mono and disubstituted cyclohexanes.	Nil
M.Sc. II	Applications of following metal in organic synthesis	CC-1145C	Pd, Mg, Rh, Tl, Si, use of Cu in Click chemistry	Nil
M.Sc. II	Mass Spectrometry	CC-1144C	Introduction, ion production- EI, CI, FD and FAB, factors affecting fragmentation, ion analysis, ion abundance; Mass spectral fragmentation of aldehydes, ketones, aromatic hydrocarbons, carboxylic acids, ethers, alcohols, amines, nitro, cyano compounds; molecular ion peak, metastable ion peak; High resolution mass spectrometry (HRMS), MALDI, TOF; Problems associated with Mass Spectroscopy.	Nil
M.Sc. II	Carbon-13 NMR Spectroscopy	CC-1144C	a) General introduction to 13C NMR spectroscopy; chemical shift values [aliphatic, olefinic, alkyne, aromatic, heteroaromatic and carbonyl compounds]; proton coupled, proton decoupled 13C NMR spectra, advanced 13C NMR techniques (NOE, DEPT, Off resonance, HETCOR), Heteronuclear coupling, problems associated with 13C NMR. b) b) Structural problems based on combined spectroscopic techniques (including reaction sequences)	Nil
M.Sc. II	Six membered Heterocycles with two and more Heteroatoms	CC-1146C	a) Synthesis and reactions of diazines & triazines. b) Seven membered Heterocycles Synthesis and reactions of azepines, oxepines & thiepines.	Nil
M.Sc. II	Organic chemistry Practicals	CPP-1145C & CPP1146C	a) Ternary Mixture analysis b) Two step preparation and spectral problems	Nil

Dr. D. S. Gaikwad

ESTD. JUNE 1964 VIVEKANAND COLLEGE KOLHAPUR-416003

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Vivekanand College, Kolhapur (Autonomous)
Syllabus Completion Report for Academic Year - 2021-22
Sem. II, IV
Department- Chemistry
Name of the Teacher – **Dr. D. S. Gaikwad**

Class	Unit Allotted	Subject Code	Units Completed	Remark
M.Sc. I	Study of following reactions and Alkylation and Acylation	CC-1138B	a) Mechanism of condensation reaction involving enolates, Dieckmann, Wagner-Meerwein, Robinson annulation, Reimer-Tieman, Chichibabin, Pummerer, Payne rearrangment, SimonSmith, Ulmann, Mc-Murry, Dakin. b) Introduction, Types of alkylation and alkylating agents: C-Alkylation and Acylation of active methylene compounds and their applications.	Nil
M.Sc. I	Study of Organometallic compounds and Methodologies in organic synthesis	CC-1138B	a) Organo-lithium, organo cobalt, Ce, Ti, Use of lithium dialkyl cuprate, their addition to carbonyl and unsaturated carbonyl compounds. b) Ideas of synthones and retrones, Functional group transformations and inter conversions of simple functionalities.	Nil
M.Sc. II	Stereochemistry: Allenes and spiranes	CC-1150D	Stereochemistry of compounds containing no chiral carbon atoms and diastereoisomerism (Geometrical isomerism). a) Stereochemistry of Allenes, Spiranes and Biphenyls. Assignment of configuration b) Configuration of diastereomers (Geometrical isomerism) based on physical and chemical methods.	Nil
M.Sc. II	Alkaloids	CC-1151D	Introduction, occurrence, isolation and functions of alkaloids, Structure, stereochemistry and synthesis of the following: Morphine, Reserpine, Atropine and Conin.	Nil
M.Sc. II	Vitamins	CC-1151D	Introduction of Vitamins, Classification and nomenclature of Vitamins, Sources of vitamins and their deficiency, Synthesis, structure and biological functions of vitamin B1, B2, B5, B6 and Biotin (Vitamin H).	Nil
M.Sc. II	Organic chemistry Practicals	CPP-1154D & CPP1155D	a) Estimation of Nitrogen and Sulphur b) Three step preparation	Nil

Dr. D. S. Gaikwad

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Chemistry Department
Vivekanand College,
Kolhapur.

Vivekanand College, Kolhapur (Autonomous)

Syllabus Completion Report

Academic Year - 2021-22

Sem-I, Sem-III, Sem-V

Department- Chemistry

Name of the Teacher – **Mr. S. S. Kadam**

Name of the Class	Units Allotted	Units Completed	Remark
B.Sc.I (Div-A)	▪ Fundamentals of Organic Chemistry ▪ Aldehyde and Ketones	▪ Fundamentals of Organic Chemistry ▪ Aldehyde and Ketones	Completed
B.Sc.I (Div- B)	▪ Fundamentals of Organic Chemistry ▪ Aldehyde and Ketones	▪ Fundamentals of Organic Chemistry ▪ Aldehyde and Ketones	Completed
B.Sc.I (Div-C)	▪ Fundamentals of Organic Chemistry ▪ Aldehyde and Ketones	▪ Fundamentals of Organic Chemistry ▪ Aldehyde and Ketones	Completed
B.Sc.II	▪ Carboxylic acids and their derivatives	▪ Carboxylic acids and their derivatives	Completed
B.Sc.III	▪ Name reactions ▪ Electrophilic and Nucelophilic substitution reactions of aromatic compounds	▪ Name reactions ▪ Electrophilic and Nucelophilic substitution reactions of aromatic compounds	Completed
M.Sc.I	-	-	-
M.Sc.II	▪ Application of the following reagents and reaction in synthesis	▪ Application of the following reagents and reaction in synthesis	Completed

Kadam

Mr. S. S. Kadam

SDShirke

Dr. Mrs. S. D. Shirke

Head

Dept. of Chemistry

Vivekanand College Kolhapur

VIVEKANAND COLLEGE ESTD. KOLHAPUR 416003

Vivekanand College, Kolhapur (Autonomous)

Syllabus Completion Report

Academic Year - 2021-22

Sem-II, Sem-IV, Sem-VI

Department- Chemistry

Name of the Teacher – **Mr. S. S. Kadam**

Name of the Class	Units Allotted	Units Completed	Remark
B.Sc.I (Div-A)	-	-	-
B.Sc.I (Div- B)	-	-	-
B.Sc.I (Div-C)	-	-	-
B.Sc.II	Kinetic Theory of Gases	Kinetic Theory of Gases	Completed
B.Sc.III	▪ Introduction to Spectroscopy ▪ Ultra-Violet (UV) Spectroscopy ▪ Infra-Red (IR) Spectroscopy	▪ Introduction to Spectroscopy ▪ Ultra-Violet (UV) Spectroscopy ▪ Infra-Red (IR) Spectroscopy	Completed
M.Sc.I	-	-	-
M.Sc.II	▪ a) Steroids & Prostaglandins	▪ a) Steroids & Prostaglandins	Completed

Kadam

Mr. S. S. Kadam

VIVEKANAND COLLEGE ESTD. JUNE 1964 KOLHAPUR-416003

Dr. Mrs. S. D. Shirke

Head
Dept. of Chemistry
Vivekanand College Kolhapur

SYLLABUS COMPLETION REPORT – DEPARTMENT OF CHEMISTRY
ACADEMIC YEAR 2021-22

Teacher Name: Mr. A. T. Mane				
Class	**Subject**	**Total Units**	**Completed Units**	**Remaining Units**
B.Sc. I (Sem II)	DSC-1002B Organic and Physical Chemistry	**1**	**Unit-I: Distribution law** Introduction, solute, solvent and solution, miscible and immiscible liquids, Nernst distribution law and its limitations, Modification of distribution law with respect to change in molecular state of solute (association and dissociation of solute in one of the solvents), Numerical problems. Applications of the distribution law i. Process of extraction (derivation expected). ii. Determination of solubility of solute in particular solvent. iii. distribution indicators. iv. determination of molecular weight of solute in different solvents.	***NIL***
B.Sc .II (Sem IV)	DSC-2D Inorganic and Physical Chemistry	**2**	**Unit I: Transition Elements (3d series)** General group trends with special reference to electronic configuration, variable valency, colour, magnetic and catalytic properties and ability to form complexes. **Unit III: Molecular Orbital Theory [MOT]** Introduction, Salient features of MOT of octahedral complexes with sigma bonding such as $[Ti(H_2O)_6]^{3+}$, $[CoF_6]^{3-}$, $[Co(NH_3)_6]^{3+}$, Merits and demerits of MOT.	**NIL**
B.Sc. III (Sem V)	Paper -X (Inorganic Chemistry)	**1**	**Unit-1 Solid State Chemistry** Structures of Solids, Importance of solid state chemistry, Crystals: size and shape of crystals, interfacial angles in crystals, Designation of planes in crystals: Miller indices, Classification of solids on the basis of bonding, Explanation of terms viz. crystal lattice, lattice points, unit cells and lattice constants, Closest packing of rigid spheres (hcp, ccp) packing density in simple cubic, bcc, fcc and hcp lattices (numerical problems expected), Structures of metallic solids, Tetrahedral and octahedral interstitial voids in ccp lattice, tetrahedral holes, Defects in crystal structures; effects of Schottky and Frenkel defects.	**NIL**
B.Sc. III (Sem VI)	Paper XII (Industrial Chemistry)	**1**	**Unit-2 Manufacturing of Heavy Chemicals** General introduction and Indian Scenario of Heavy chemicals, Manufacture of NH3 by modified Haber–Bosch process, Physico-chemical principles and uses of NH3. Manufacture of H2SO4 by contact process, Physicochemical principles, and uses of H2SO4. Manufacture of HNO3 by Ostwald`s process, Physicochemical principles involved and uses of HNO3	**NIL**

Mr. A. T. Mane
(Assistant Professor)

Dr. Mrs. S. D. Shirke
(Head of Dept.)

Head
Chemistry Department
Vivekanand College
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