

A.T.V.V. Mandal's  
**B. D. Kale Mahavidyalaya, Ghodegaon**  
 DEPARTMENT OF CHEMISTRY  
**Course Outcomes**  
**F.Y.B.Sc. (Chemistry)**

Sr.No.	Class	Course	Course Outcome
	<b>F.Y.B.Sc Semester I</b>	CH-101 : Physical & Inorganic Chemistry	<p>1.This topic makes understanding of behavior of gases, ideal gas as a model system and its extension to real gases. The dependence of physical state on pressure, volume and temperature is being realized.</p> <p>2. The existence of liquid state, comparison of its properties with other states is to be perceived. Liquid crystal are essentials in all common and research devices and instruments hence they are introduced briefly.</p> <p>3.Student should be able to solve problems regarding van der Waal's and Critical constant and regarding P-V-T relations</p> <p>4.Theoretical basis of adsorption phenomena is integrated. Understanding dynamic nature of surface and its applications in catalysis and in dispersed phases will lead to new area of nanoscience</p> <p>5.Mathematical background required for derivations, depictions and problem solving. This</p> <p>6. Mole concept, GMV relationship, Student should be able to solve problems based on GMV relationship, Normality, Molarity, Normal solution, Molar solution, equivalent weight, ppm, % w/v, % v/v &amp; related problems., Standard solution, primary &amp; secondary standard substances, standerdisation of solution &amp; related problems, Understand the concept of oxidation &amp; reduction, oxidizing agent, reducing agent, redox reaction, oxidation number, Balance the equation by ion electron method &amp; oxidation number Method, Calculation of Equivalent weight of oxidant &amp; reductant.</p>

		CH-102:Organic & Inorganic chemistry	<ol style="list-style-type: none"> <li>1. The fundamental concepts which govern the structure, bonding, properties and reactivities of organic molecules such as covalent character, hybridization, bond angles, bond energies, bond polarities and shapes of molecules.</li> <li>2. Drawing of organic molecules and arrow pushing concept.</li> <li>3. Acid-base theories, <math>pK_a</math> / <math>pK_b</math> values for common organic acids and bases and factors affecting strength of acids and bases.</li> <li>4. Structural effects and their applications in determining strength of acids and bases.</li> <li>5. The common and IUPAC names of alkanes, alkenes, alkynes and homocyclic, polycyclic aromatic hydrocarbons.</li> <li>6. Methods of preparation and chemical reactions of alkanes, alkenes, alkynes and homocyclic, polycyclic aromatic hydrocarbons.</li> <li>7. Application of Huckel's rule to different organic compounds to find out aromatic /non aromatic characters.</li> <li>8. Skeleton of long form of periodic table</li> <li>9. Quantum numbers</li> <li>10. Shells, sub-shells, types of orbital and their shapes</li> <li>11. Aufbau, Paulin's exclusion principle and Hunds rule</li> <li>12. Block, group, periodic law and periodicity</li> <li>13. Name, symbol, electronic configuration, trends and properties</li> <li>14. Crown ether and cryptans</li> <li>15. Separation of s-block elements with crown ethers</li> <li>16. Compounds of s-block elements: oxides, hydroxides, peroxides and superoxides</li> <li>17. Application of s-block elements: Industrial, biological and agricultural field</li> </ol>
		CH-103 : Chemistry Practical –I	<ol style="list-style-type: none"> <li>1.To study the role of emulsifying agents in stabilizing the emulsion of different oils</li> <li>logarithmic function c) linear functions</li> <li>2.. To determine the gas constant R in different units by eudiometer method.</li> <li>3. To determine relative viscosity</li> <li>4. Investigate the adsorption of acetic acid by activated charcoal and test the validity of Freundlich /Langmuir adsorption isotherm.</li> </ol>

			5. To determine $\Delta H$ and $\Delta S$ for the following chemical reactions 6. Determination of hardness of water 7. Analysis of alkali mixture by volumetric method.
	<b>F.Y.B.Sc Semester II</b>	<p>CH-101 : Physical &amp; Inorganic Chemistry</p> <p>CH-102:Organic &amp; Inorganic chemistry</p>	<p>1. Basic principle of overlapping of atomic orbital with specific shapes and sizes          2. Fundamental concepts of theories of overlapping of atomic orbitals          3. Concept of hybridization and differentiation with overlap          4. Concept of different types valence shell electron pairs and their contribution in bonding          5. Application of non-bonded lone pairs in shape of molecule          6. Basic understanding of geometry and effect of lone pairs with examples</p> <p>1. Structure, nomenclature, preparation and reactions of organic compounds.          2. The characteristic reactions of each functional group which can be used to identify and distinguish that compound from other compounds.          3. Predict the conversion of one functional group into other functional group involving one or more number of steps.          4. Conversion of the given compound into other compound containing more or less number of carbon atoms.          5. Prediction of possible products when reactants are given. In case there are more than one possible products, identify the major and minor products.          6. Suggest the possible reagents to bring about the given conversion.          7. Concept of isomerism, types of isomers and representation of organic molecules.          8. Conformational isomerism in alkanes with energy profile diagram.          9. Concept of geometrical isomerism with E/Z nomenclature.          10. Understanding of optical activity, isomer number, tetrahedral carbon atom, concept of chirality, enantiomerism, R/S nomenclature for single chiral centre.          11. To write electronic configuration of any element.          12. To give reasons for anomalous behavior of first element of IIIA to VII A groups with</p>

		CH-103 : Chemistry Practical –I	<p>other elements in the same group.</p> <p>13. To know the exact position p-block elements in the long form of the periodic table.</p> <p>14. To know the allotropes of carbon.</p> <p>15. Basic compounds of boron, aluminum, silicon</p> <p>16. Concept of oxyanions, different than mineral acids, oxyacids of phosphorous &amp; sulphur</p> <p>17. Overlapping of atomic orbitals of halogens, interhalogen compounds</p> <p>1. Inorganic qualitative analyses</p> <p>2. strength of HCL</p> <p>3. Estimation of % purity of a given sample of sodium chloride</p> <p>4. Thin layer chromatography</p> <p>5. Crystallization with M.P. and % yield of purified compound</p> <p>6. Distillation with B.P. and % yield of purified compound</p> <p>7. Sublimation with M.P. and % yield of purified compound</p> <p>8. Organic qualitative analysis</p>
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