

# महाराणाप्रतापजी. कालेज, जंगल धूसड़, गोरखपुर

| Class : B.Sc. I |         | LESSION PLAN: 2021-22 |       | Subject : Chemistry               |                                                                                             |
|-----------------|---------|-----------------------|-------|-----------------------------------|---------------------------------------------------------------------------------------------|
| DATE            | LECTURE | TEACHER'S NAME        | PAPER | CHAPTER                           | TOPIC                                                                                       |
| 02.08.2021      | 1       | DR. R. SAHAY          | I     | Gaseous State                     | Postulates of kinetic theory of gases                                                       |
| 03.08.2021      | 2       | DR. R. SAHAY          | I     | Gaseous State                     | Deviation from ideal behaviour                                                              |
| 04.08.2021      | 1       | S. JAISWAL            | II    | Atomic Structure & Periodic Table | Quantum numbers                                                                             |
| 05.08.2021      | 2       | S. JAISWAL            | II    | Atomic Structure & Periodic Table | Shapes of orbitals                                                                          |
| 06.08.2021      | 1       | DR. S. K. VERNWAL     | III   | Structure and Reactivity          | Hybridisation                                                                               |
| 07.08.2021      |         | DR. S. K. VERNWAL     | CT    |                                   |                                                                                             |
| 09.08.2021      | 3       | DR. R. SAHAY          | I     | Gaseous State                     | van der Waals equation of state, PV-isotherm of real gases                                  |
| 10.08.2021      | 4       | DR. R. SAHAY          | I     | Gaseous State                     | Continuity of states, Isotherm of van der Waals equation                                    |
| 11.08.2021      | 3       | S. JAISWAL            | II    | Atomic Structure & Periodic Table | Pauli's exclusion principle, Hund's rule                                                    |
| 12.08.2021      | 4       | S. JAISWAL            | II    | Atomic Structure & Periodic Table | Aufbau principle, Variation of orbital energies and Energy level diagram                    |
| 14.08.2021      | 2       | DR. S. K. VERNWAL     | III   | Structure and Reactivity          | Homolysis and Heterolysis                                                                   |
| 16.08.2021      |         | DR. S. K. VERNWAL     | CT    |                                   |                                                                                             |
| 17.08.2021      | 5       | DR. R. SAHAY          | I     | Gaseous State                     | Relationship between critical constant & van der Waals constant, Law of corresponding state |
| 18.08.2021      | 6       | DR. R. SAHAY          | I     | Gaseous State                     | Reduced equation of state, root mean square, average & most probable velocity               |
| 20.08.2021      | 5       | S. JAISWAL            | II    | Atomic Structure & Periodic Table | Long form of periodic table                                                                 |
| 21.08.2021      | 6       | S. JAISWAL            | II    | Periodic properties of Elements   | Types of radii                                                                              |
| 23.08.2021      | 3       | DR. S. K. VERNWAL     | III   | Structure and Reactivity          | Free radicals, Carbocations and Carbanions                                                  |
| 24.08.2021      |         | DR. S. K. VERNWAL     | ME    |                                   |                                                                                             |
| 25.08.2021      | 7       | DR. R. SAHAY          | I     | Gaseous State                     | Qualitative discussion of the Maxwell's distribution of molecular velocities                |
| 26.08.2021      | 8       | DR. R. SAHAY          | I     | Gaseous State                     | Collision number, Mean free path & collision diameter, Liquefaction of gases                |
| 27.08.2021      | 7       | S. JAISWAL            | II    | Periodic properties of Elements   | Electron affinity & its variation                                                           |
| 31.08.2021      | 8       | S. JAISWAL            | II    | Periodic properties of Elements   | Ionisation potential                                                                        |
| 01.09.2021      | 4       | DR. S. K. VERNWAL     | III   | Structure and Reactivity          | Polarity of covalent bonds, Inductive effect                                                |
| 02.09.2021      |         | DR. S. K. VERNWAL     | CT    |                                   |                                                                                             |
| 03.09.2021      | 9       | DR. R. SAHAY          | I     | Liquid State                      | Intermolecular forces, Structure of liquids                                                 |
| 04.09.2021      | 10      | DR. R. SAHAY          | I     | Liquid State                      | Structural differences between solids, liquids & gases                                      |
| 06.09.2021      | 9       | S. JAISWAL            | II    | Periodic properties of Elements   | Concept of effective nuclear charge & shielding effect                                      |
| 07.09.2021      | 10      | S. JAISWAL            | II    | Periodic properties of Elements   | Electronegativity & its variation                                                           |
| 08.09.2021      | 5       | DR. S. K. VERNWAL     | III   | Structure and Reactivity          | Electromeric effect, Resonance                                                              |
| 09.09.2021      |         | DR. S. K. VERNWAL     | CT    |                                   |                                                                                             |
| 10.09.2021      | 11      | DR. R. SAHAY          | I     | Liquid State                      | Structural differences between liquid crystal, solid & liquid                               |
| 11.09.2021      | 12      | DR. R. SAHAY          | I     | Liquid State                      | Classification, structure of nematic, smectic & cholesteric phases & applications           |

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| 13.09.2021 | 11 | S. JAISWAL        | II  | Periodic properties of Elements         | Pauling, Mulliken & Allred Rochow Scale                                                                                                                                              |
| 14.09.2021 | 12 | S. JAISWAL        | II  | Chemical Bonding                        | Ionic bonds, Radius ratio in ionic solids                                                                                                                                            |
| 15.09.2021 | 6  | DR. S. K. VERNWAL | III | Structure and Reactivity                | Hyperconjugation                                                                                                                                                                     |
| 16.09.2021 |    | DR. S. K. VERNWAL | CT  |                                         |                                                                                                                                                                                      |
| 18.09.2021 | 13 | DR. R. SAHAY      | I   | Solid State                             | Definition of space lattice & unit cell                                                                                                                                              |
| 20.09.2021 | 14 | DR. R. SAHAY      | I   | Solid State                             | Law of constancy of interfacial angles                                                                                                                                               |
| 21.09.2021 | 13 | S. JAISWAL        | II  | Chemical Bonding                        | Lattice energy & Born-Haber cycle                                                                                                                                                    |
| 22.09.2021 | 14 | S. JAISWAL        | II  | Chemical Bonding                        | Polarisation of ions & Fajan's rule                                                                                                                                                  |
| 23.09.2021 | 7  | DR. S. K. VERNWAL | III | Structure and Reactivity                | Hydrogen bonding                                                                                                                                                                     |
| 25.09.2021 |    | DR. S. K. VERNWAL | ME  |                                         |                                                                                                                                                                                      |
| 27.09.2021 | 15 | DR. R. SAHAY      | I   | Solid State                             | Law of symmetry, symmetry element in crystal                                                                                                                                         |
| 29.09.2021 | 16 | DR. R. SAHAY      | I   | Solid State                             | Derivation of Bragg's equation                                                                                                                                                       |
| 30.09.2021 | 15 | S. JAISWAL        | II  | Chemical Bonding                        | Covalent bonds                                                                                                                                                                       |
| 01.10.2021 | 16 | S. JAISWAL        | II  | Chemical Bonding                        | sp, sp <sup>2</sup> , sp <sup>3</sup> , sp <sup>3</sup> d & sp <sup>3</sup> d <sup>2</sup> hybridisation                                                                             |
| 04.10.2021 | 8  | DR. S. K. VERNWAL | III | Stereochemistry                         | Chirality, elements of symmetry                                                                                                                                                      |
| 05.10.2021 |    | DR. S. K. VERNWAL | CT  |                                         |                                                                                                                                                                                      |
| 07.10.2021 | 17 | S. JAISWAL        | II  | Chemical Bonding                        | Determination of shape of molecules: NH <sub>3</sub> , H <sub>2</sub> O, H <sub>3</sub> O <sup>+</sup> , ICl <sub>2</sub> <sup>-</sup> , I <sub>3</sub> <sup>-</sup> by VSEPR theory |
| 08.10.2021 | 18 | S. JAISWAL        | II  | Chemical Bonding                        | Determination of shape of molecules: NH <sub>3</sub> , H <sub>2</sub> O, H <sub>3</sub> O <sup>+</sup> , ICl <sub>2</sub> <sup>-</sup> , I <sub>3</sub> <sup>-</sup> by VSEPR theory |
| 09.10.2021 | 9  | DR. S. K. VERNWAL | III | Stereochemistry                         | Optical isomerism of Lactic acid and Tartaric acid                                                                                                                                   |
| 11.10.2021 | 10 | DR. S. K. VERNWAL | III | Stereochemistry                         | Racemisation and Resolution                                                                                                                                                          |
| 18.10.2021 | 17 | DR. R. SAHAY      | I   | Solid State                             | Determination of crystal structure of NaCl & KCl                                                                                                                                     |
| 20.10.2021 |    | DR. R. SAHAY      | CT  |                                         |                                                                                                                                                                                      |
| 21.10.2021 | 19 | S. JAISWAL        | II  | Chemical Bonding                        | Odd electron bond, Maximum covalency                                                                                                                                                 |
| 22.10.2021 | 20 | S. JAISWAL        | II  | Chemical Bonding                        | Hydrogen bonding, Metallic bonding                                                                                                                                                   |
| 23.10.2021 | 11 | DR. S. K. VERNWAL | III | Stereochemistry                         | Newmann and Sawhorse projection formula                                                                                                                                              |
| 25.10.2021 | 12 | DR. S. K. VERNWAL | III | Stereochemistry                         | D, L and R, S nomenclature                                                                                                                                                           |
| 26.10.2021 | 18 | DR. R. SAHAY      | I   | Colloidal State & Macromolecules        | Definition & classification of colloids, Macromolecule kinetics, optical & electrical stability of colloids                                                                          |
| 27.10.2021 |    | DR. R. SAHAY      | M.E |                                         |                                                                                                                                                                                      |
| 28.10.2021 | 21 | S. JAISWAL        | II  | General studies of s & p block elements | Discussion of I & II group elements                                                                                                                                                  |
| 29.10.2021 | 22 | S. JAISWAL        | II  | General studies of s & p block elements | Discussion of 13 & 14 group elements                                                                                                                                                 |
| 30.10.2021 | 13 | DR. S. K. VERNWAL | III | Stereochemistry                         | Geometrical isomerism, E- Z nomenclature                                                                                                                                             |
| 08.11.2021 | 14 | DR. S. K. VERNWAL | III | Stereochemistry                         | Conformations of Ethane and n-Butane                                                                                                                                                 |
| 09.11.2021 | 19 | DR. R. SAHAY      | I   | Colloidal State & Macromolecules        | Protective action, Hardy-Schulze law, Gold number, Type of                                                                                                                           |

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|             |    |                 |     |                                              | emulsion,Preparation of emulsified                                                                                                         |
| 11.11.2021  |    | DR. R. SAHAY    | CT  |                                              |                                                                                                                                            |
| 12.11.2021  | 23 | S. JAISWAL      | II  | General studies of s & p block elements      | Discussion of 15 &16 group elements                                                                                                        |
| 13.11.2021  | 24 | S. JAISWAL      | II  | General studies of s & p block elements      | Discussion of 15 &16 group elements                                                                                                        |
| 16.11.2021  | 15 | PRIYANKA MISHRA | III | Alkyl halides & Grignard reagents            | Mechanism of nucleophilic substitution reaction of alkyl halides                                                                           |
| 17.11.2021  | 16 | PRIYANKA MISHRA | III | Alkyl halides & Grignard reagents            | Preparation of Grignard reagent and synthetic applications                                                                                 |
| 18.11.2021  | 20 | DR. R. SAHAY    | I   | Colloidal State & Macromolecules             | Liquid in solid(Gels) classification, preparation & properties inhibition general application of colloids                                  |
| 20.11.2021  |    | DR. R. SAHAY    | CT  |                                              |                                                                                                                                            |
| 22.11.2021  | 25 | S. JAISWAL      | II  | Occurrence, extraction & isolation of metals | Ores & metallurgy of Li                                                                                                                    |
| 23.11.2021  | 26 | S. JAISWAL      | II  | Occurrence, extraction & isolation of metals | Ores & metallurgy of Be & F <sub>2</sub>                                                                                                   |
| 25.11.2021  | 17 | PRIYANKA MISHRA | III | Alkyl halides & Grignard reagents            | Synthetic applications of Grignard reagent                                                                                                 |
| 26.11.2021  | 18 | PRIYANKA MISHRA | III | Alkyl halides & Grignard reagents            | Synthetic applications of Grignard reagent                                                                                                 |
| 27.11.2021  | 21 | DR. R. SAHAY    | I   | Colloidal State & Macromolecules             | Determination of molecular weight of macro molecules by osmotic pressure &viscosity method, concept of micelles and critical concentration |
| 29.11.2021  |    | DR. R. SAHAY    | ME  |                                              |                                                                                                                                            |
| 30.11..2021 | 27 | S. JAISWAL      | II  | Preparation, properties & structure          | Diborane                                                                                                                                   |
| 01.12.2021  | 28 | S. JAISWAL      | II  | Preparation, properties & structure          | Borazine                                                                                                                                   |
| 02.12.2021  | 19 | PRIYANKA MISHRA | III | Alcohols and Ethers                          | Classification and distinction of primary, secondary and tertiary alcohols                                                                 |
| 03.12.2021  | 20 | PRIYANKA MISHRA | III | Alcohols and Ethers                          | Mechanism of dehydration of alcohols                                                                                                       |
| 07.12.2021  | 22 | DR. R. SAHAY    | I   | Colloidal State & Macromolecules             | A brief introduction of conducting and light emitting polymer                                                                              |
| 08.12.2021  |    | DR. R. SAHAY    | CT  |                                              |                                                                                                                                            |
| 09.12.2021  | 21 | PRIYANKA MISHRA | III | Alcohols and Ethers                          | Isomerism of propanols, butanols and pentanols                                                                                             |
| 11.12.2021  | 22 | PRIYANKA MISHRA | III | Alcohols and Ethers                          | Industrial preparation and reactions of Glycerol                                                                                           |
| 13.12.2021  | 23 | DR. R. SAHAY    | I   | Chemical Kinetics & Catalysis                | Concentration, dependence of rate mathematical characteristics                                                                             |
| 14.12.2021  | 24 | DR. R. SAHAY    | I   | Chemical Kinetics & Catalysis                | Simple chemical reaction, Zero order reaction                                                                                              |
| 15.12.2021  | 29 | S. JAISWAL      | II  | Preparation, properties & structure          | Hydrazine                                                                                                                                  |
| 16.12.2021  |    | S. JAISWAL      | CT  |                                              |                                                                                                                                            |
| 17.12.2021  | 23 | PRIYANKA MISHRA | III | Alcohols and Ethers                          | Williamson synthesis, formation and cleavage of oxonium salts                                                                              |
| 18.12.2021  | 24 | PRIYANKA MISHRA | III | Alcohols and Ethers                          | Crown ethers                                                                                                                               |
| 20.12.2021  | 25 | DR. R. SAHAY    | I   | Chemical Kinetics & Catalysis                | First, second order of reaction                                                                                                            |
| 21.12.2021  | 26 | DR. R. SAHAY    | I   | Chemical Kinetics & Catalysis                | Pseudo order reaction, Determination of the order of reaction, Differential method, Method of integration                                  |

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| 22.12.2021 | 30 | S. JAISWAL        | II  | Structure & Properties                      | Interhalogen compounds & Polyhalides                                        |
| 23.12.2021 |    | S. JAISWAL        | CT  |                                             |                                                                             |
| 24.12.2021 | 25 | DR. S. K. VERNWAL | III | Carboxylic Acids                            | Structure of carboxyl group                                                 |
| 27.12.2021 | 26 | DR. S. K. VERNWAL | III | Carboxylic Acids                            | Mechanism of esterification and acetylation                                 |
| 28.12.2021 | 27 | DR. R. SAHAY      | I   | Chemical Kinetics & Catalysis               | Method of integration, Half life period and isolation method                |
| 29.12.2021 | 28 | DR. R. SAHAY      | I   | Chemical Kinetics & Catalysis               | Radioactive decay as a first order phenomenon                               |
| 30.12.2021 | 31 | S. JAISWAL        | II  | Structure & Properties                      | Fluorides of Xenone                                                         |
| 31.12.2021 |    | S. JAISWAL        | ME  |                                             |                                                                             |
| 01.01.2022 | 27 | DR. S. K. VERNWAL | III | Carboxylic Acids                            | $A_{AC}^2$ and $B_{AC}^2$ mechanism of ester hydrolysis                     |
| 03.01.2022 | 28 | DR. S. K. VERNWAL | III | Alkenes, Alkynes, Alkadienes & Cycloalkanes | Addition of Hydrogen, Halogens and Halogen acids                            |
| 04.01.2022 | 29 | DR. R. SAHAY      | I   | Chemical Kinetics & Catalysis               | Experimental method for the study of chemical kinetics                      |
| 05.01.2022 | 30 | DR. R. SAHAY      | I   | Chemical Kinetics & Catalysis               | Effect of temperature on rate of reaction                                   |
| 06.01.2022 | 32 | S. JAISWAL        | II  | Structure & Basicities                      | Oxyacids of Boron                                                           |
| 07.01.2022 |    | S. JAISWAL        | CT  |                                             |                                                                             |
| 08.01.2022 | 29 | DR. S. K. VERNWAL | III | Alkenes, Alkynes, Alkadienes & Cycloalkanes | Addition of Water and Sulphuric acid                                        |
| 10.01.2022 | 30 | DR. S. K. VERNWAL | III | Alkenes, Alkynes, Alkadienes & Cycloalkanes | Ozonolysis, Hydroboration, Hydroxylation and Epoxydation                    |
| 11.01.2022 | 31 | DR. R. SAHAY      | I   | Chemical Kinetics & Catalysis               | Arrhenius equation, Concept of activation energy                            |
| 12.01.2022 | 32 | DR. R. SAHAY      | I   | Chemical Kinetics & Catalysis               | Simple collision theory based on hard sphere model, Transition state theory |
| 13.01.2022 | 33 | S. JAISWAL        | II  | Structure & Basicities                      | Oxyacids of Phosphorous                                                     |
| 17.01.2022 |    | S. JAISWAL        | CT  |                                             |                                                                             |
| 18.01.2022 | 31 | DR. S. K. VERNWAL | III | Alkenes, Alkynes, Alkadienes & Cycloalkanes | Acetylene as carbon acid, Addition reactions of Acetylene                   |
| 19.01.2022 | 32 | DR. S. K. VERNWAL | III | Alkenes, Alkynes, Alkadienes & Cycloalkanes | Stability and addition reactions of 1,3-Butadiene                           |
| 20.01.2022 | 33 | DR. R. SAHAY      | I   | Chemical Kinetics & Catalysis               | Expression for the rate constant based on equilibrium                       |
| 21.01.2022 | 34 | DR. R. SAHAY      | I   | Chemical Kinetics & Catalysis               | Characteristics of catalysed reaction, classification of catalyst           |
| 22.01.2022 | 34 | S. JAISWAL        | II  | Structure & Basicities                      | Oxyacids of Sulphur                                                         |
| 24.01.2022 |    | S. JAISWAL        | ME  |                                             |                                                                             |
| 27.01.2022 | 33 | DR. S. K. VERNWAL | III | Alkenes, Alkynes, Alkadienes & Cycloalkanes | Preparation and properties of small ring Cycloalkanes                       |
| 28.01.2022 | 34 | PRIYANKA MISHRA   | III | General reactions of carbonyl compounds     | Mechanism of addition of Sodium bisulphite and Hydrogen cyanide             |
| 29.01.2022 | 35 | DR. R. SAHAY      | I   | Chemical Kinetics & Catalysis               | Characteristics of catalysed reaction, classification of catalyst           |
| 30.01.2022 | 36 | DR. R. SAHAY      | I   | Mathematical Concept & Computer             | Logarithm relation sketching linear graph                                   |
|            |    |                   |     |                                             |                                                                             |

| Extra* | 37 | DR. R. SAHAY      | I   | Mathematical Concept & Computer               | Calculation of slopes, Differentiation of function of $f(x)$ , $x^n$ , $e^x$ , $\sin x$ , $\log x$ |
|--------|----|-------------------|-----|-----------------------------------------------|----------------------------------------------------------------------------------------------------|
|        | 38 | DR. R. SAHAY      | I   | Mathematical Concept & Computer               | Partial difference & integration                                                                   |
| *      | 36 | S JAISWAL         | II  | Problems & Solutions                          | Numerical Problems                                                                                 |
| *      | 35 | PRIYANKA MISHRA   | III | General reactions of carbonyl compounds       | Aldol condensation, Cannizzaro reaction                                                            |
| *      | 36 | PRIYANKA MISHRA   | III | General reactions of carbonyl compounds       | Wolf-Kishner reduction, Clemmensen reduction                                                       |
| *      | 37 | PRIYANKA MISHRA   | III | General reactions of carbonyl compounds       | Meerwein-Ponndorf-Verley reduction, Catalytic reduction, $LiAlH_4$                                 |
| *      | 38 | PRIYANKA MISHRA   | III | General reactions of carbonyl compounds       | Preparation and synthetic uses of Acetoacetic ester                                                |
| *      | 38 | DR. R. SAHAY      | I   | Mathematical Concept & Computer               | , integration of some relevant function                                                            |
| *      | 39 | DR. R. SAHAY      | I   | Mathematical Concept & Computer               | Permutation, combination, factorial & probability                                                  |
| *      | 37 | S. JAISWAL        | II  | Problems & Solutions                          | Numerical Problems                                                                                 |
| *      | 38 | S. JAISWAL        | II  | Problems & Solutions                          | Numerical Problems                                                                                 |
| *      | 39 | PRIYANKA MISHRA   | III | Compounds containing reactive methylene group | Keto-enol tautomerism, Preparation of Malonic ester                                                |
| *      | 40 | PRIYANKA MISHRA   | III | Compounds containing reactive methylene group | Synthetic uses of Malonic ester                                                                    |
| *      | 40 | DR. R. SAHAY      | I   | Mathematical Concept & Computer               | General introduction of computer & component of computer                                           |
| *      | 41 | DR. R. SAHAY      | I   | Mathematical Concept & Computer               | Hardware, Software, Input, Output device, Binary number & Arithmetic                               |
| *      | 39 | S. JAISWAL        | II  | Problems & Solutions                          | Numerical Problems                                                                                 |
| *      | 40 | S. JAISWAL        | II  | Problems & Solutions                          | Numerical Problems                                                                                 |
| *      | 41 | PRIYANKA MISHRA   | III | Nitrogen containing compounds                 | Preparation and distinction between Alkyl nitrites and Nitro alkanes                               |
| *      | 42 | PRIYANKA MISHRA   | III | Nitrogen containing compounds                 | Alkyl cyanides and Alkyl isocyanides                                                               |
| *      | 42 | DR. R. SAHAY      | I   | Mathematical Concept & Computer               | Introduction to computer languages, programming, operating system                                  |
| *      | 43 | PRIYANKA MISHRA   | III | Nitrogen containing compounds                 | Amines, classification and distinction                                                             |
| *      | 44 | PRIYANKA MISHRA   | III | Nitrogen containing compounds                 | Separation of primary, secondary and tertiary amines                                               |
| *      | 45 | PRIYANKA MISHRA   | III | Nitrogen containing compounds                 | Preparation of amines, and general reactions                                                       |
| *      | 46 | PRIYANKA MISHRA   | III | Nitrogen containing compounds                 | Relative basicities of amines                                                                      |
| *      | 47 | DR. S. K. VERNWAL | III | Numerical questions                           | Numerical questions based on determination of structural formula                                   |

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| * | 48 | DR. S. K. VERNWAL | III | Numerical questions | Numerical questions based on determination of structural formula |
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