

# महाराणा प्रताप पी.जी. कालेज, जंगल धूसड़, गोरखपुर

| कक्षा : बी.एस-सी. भाग-एक |           | पाठ्यक्रम योजना : सत्र २०१६-२०१७ |            | विषय : रसायन विज्ञान (Chemistry)  |                                                                                                    |
|--------------------------|-----------|----------------------------------|------------|-----------------------------------|----------------------------------------------------------------------------------------------------|
| दिनांक                   | व्याख्यान | प्राध्यापक का नाम                | प्रश्नपत्र | अध्याय                            | शीर्षक                                                                                             |
| 01.08.2016               | 1         | Dr. R. Sahay                     | I          | Gaseous State                     | Postulate of kinetic theory of gases                                                               |
| 02.08.2016               | 2         | Dr. R. Sahay                     | I          | Gaseous State                     | Deviation from ideal behaviour                                                                     |
| 03.08.2016               | 1         | P. K. Verma                      | I          | Atomic structure & periodic table | Quantum numbers                                                                                    |
| 04.08.2016               | 2         | P. K. Verma                      | I          | Atomic structure & periodic table | Shapes of s,p,d, orbitals                                                                          |
| 05.08.2016               | 1         | Dr. S.K.Vernwal                  | III        | Structure & Reactivity            | Hybridisation, Homolysis & Heterolysis                                                             |
| 08.08.2016               |           | Dr. S.K.Vernwal                  |            | <b>Class Teaching</b>             |                                                                                                    |
| 09.08.2016               | 3         | Dr. R. Sahay                     | I          | Gaseous State                     | van der waal's equation of state,<br>PV- isotherms of real gases                                   |
| 10.08.2016               | 4         | Dr. R. Sahay                     | I          | Gaseous State                     | Continuity of state, the isotherms of van der waal's equation                                      |
| 11.08.2016               | 3         | P. K. Verma                      | I          | Atomic structure & Periodic table | Paulis exclusion principle, Hund's rule, Aufbau Principle                                          |
| 12.08.2016               | 4         | P. K. Verma                      | II         | Atomic structure & Periodic table | Variation of Orbital Energies & Energy level diagram                                               |
| 13.08.2016               | 2         | Dr. S.K.Vernwal                  | III        | Structure & Reactivity            | Free Radicals, Carbocations & Carbanions                                                           |
| 16.08.2016               | 5         | Dr. R. Sahay                     | I          | Gaseous State                     | Relationship between critical constants and van der waal's Constants, Law of corresponding states, |
| 17.08.2016               | 6         | Dr. R. Sahay                     | I          | Gaseous State                     | Reduced Equation of state, root mean square, average & most probable velocities                    |
| 19.08.2016               | 5         | P. K. Verma                      | I          | Atomic Structure & Periodic Table | Long form of periodic table                                                                        |
| 20.08.2016               | 6         | P. K. Verma                      | I          | Periodic Properties of Elements   | Types of radii                                                                                     |
| 22.08.2016               | 3         | Dr. S.K.Vernwal                  | III        | Structure & Reactivity            | Polarity of covalent bonds, Inductive Effect                                                       |
| 23.08.2016               |           | Dr. S.K.Vernwal                  |            | <b>Class Teaching</b>             |                                                                                                    |
|                          |           |                                  |            |                                   |                                                                                                    |
| 24.08.2016               | 7         | Dr. R. Sahay                     | I          | Gaseous State                     | Qualitative discussion of the Maxwell's distribution of molecular velocities                       |
| 26.08.2016               | 8         | Dr. R. Sahay                     | I          | Gaseous State                     | Collision number, Mean free path & collision diameter, Liquefaction of gases                       |
| 26.08.2016               | 7         | P. K. Verma                      | I          | Periodic properties of elements   | Electron affinity & its variation                                                                  |
| 29.08.2016               | 8         | P. K. Verma                      | I          | Periodic properties of elements   | Ionisation Potential                                                                               |
| 30.08.2016               | 4         | Dr. S.K.Vernwal                  | III        | Structure & Reactivity            | Electromeric effect, resonance & hyperconjugation                                                  |
| 31.08.2016               |           | Dr. S.K.Vernwal                  |            | <b>Monthly Evaluation</b>         |                                                                                                    |

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| दिनांक                   | व्याख्यान | प्राध्यापक का नाम                | प्रश्नपत्र | अध्याय                           | शीर्षक                                                                                                                              |
| 01.09.2016               | 9         | Dr. R. Sahay                     | I          | Liquid State                     | Intermolecular forces Structure of Liquids                                                                                          |
| 02.09.2016               | 10        | Dr. R. Sahay                     | I          | Liquid State                     | Structural difference between solid, liquid & gases                                                                                 |
| 03.09.2016               | 9         | P. K. Verma                      | I          | Periodic properties of elements  | Concept of effective nuclear charge & shielding effect                                                                              |
| 05.09.2016               | 10        | P. K. Verma                      | I          | Periodic properties of elements  | Electronegativity pauling scale                                                                                                     |
| 06.09.2016               | 5         | Dr. S.K.Vernwal                  | III        | Structure & Reactivity           | Hydrogen bonding                                                                                                                    |
| 07.09.2016               |           | Dr. S.K.Vernwal                  |            | <b>Class Teaching</b>            |                                                                                                                                     |
| 08.09.2016               | 11        | Dr. R. Sahay                     | I          | Liquid State                     | Difference between liquid crystals, solid & liquid                                                                                  |
| 09.09.2016               | 12        | Dr. R. Sahay                     | I          | Liquid State                     | Classification, Structure of nematic, smectic, &                                                                                    |
|                          |           |                                  |            |                                  | cholesteric phases & applications                                                                                                   |
| 10.09.2016               | 11        | P. K. Verma                      | I          | Periodic Properties              | Mulliken & allred rochow scale & its variation                                                                                      |
| 14.09.2016               | 12        | P. K. Verma                      | I          | Chemical Bonding                 | Ionic bonds, Radius ratio in ionic solids                                                                                           |
| 15.09.2016               | 6         | Dr. S.K.Vernwal                  | III        | Stereochemistry                  | Chirality, Elements of symmetry                                                                                                     |
| 16.09.2016               |           | Dr. S.K.Vernwal                  |            | <b>Class Teaching</b>            |                                                                                                                                     |
| 18.09.2016               | 13        | Dr. R. Sahay                     | I          | Solid state                      | Definition of space lattice & Unit cell, Law of                                                                                     |
|                          |           |                                  |            |                                  | constancy of Interfacial angles                                                                                                     |
| 21.09.2016               | 14        | Dr. R. Sahay                     | I          | Solid state                      | Law of symmetry, symmetry elements in crystals                                                                                      |
| 22.09.2016               | 13        | P.K. Verma                       | I          | Chemical bonding                 | Lattice energy & born-haber cycle                                                                                                   |
| 23.09.2016               | 14        | P.K. Verma                       | I          | Chemical bonding                 | Polarisation of ions & fajan's rules                                                                                                |
| 24.09.2016               | 7         | Dr. S.K.Vernwal                  | III        | Stereochemistry                  | Optical isomerism of lactic acid & tartaric acid                                                                                    |
| 26.09.2016               |           | Dr. S.K.Vernwal                  |            | <b>Monthly Evaluation</b>        |                                                                                                                                     |
| 27.09.2016               | 15        | Dr. R. Sahay                     | I          | Solid State                      | Derivation of bragg's equation                                                                                                      |
| 28.09.2016               | 16        | Dr. R. Sahay                     | I          | Solid State                      | Determination of crystal structure of NaCl & KCl                                                                                    |
| 29.09.2016               | 15        | P.K. Verma                       | I          | Chemical Bonding                 | Covalent bond                                                                                                                       |
| 03.10.2016               | 16        | P.K. Verma                       | I          | Chemical Bonding                 | Hybrid orbital description (sp, sp <sup>2</sup> , sp <sup>3</sup> , sp <sup>3</sup> d & sp <sup>3</sup> d <sup>2</sup> )            |
| 04.10.2016               | 15        | Dr. R. Sahay                     | I          | Colloidal state & macromolecules | Definition of colloids & classification of colloids kinetic,                                                                        |
|                          |           |                                  |            |                                  | optical & Electrical stability of colloids                                                                                          |
| 05.10.2016               |           | Dr. R. Sahay                     |            | <b>Class Teaching</b>            |                                                                                                                                     |
| 06.10.2016               | 17        | P.K. Verma                       | I          | Chemical Bonding                 | Determination of the shapes of molecules & ions viz                                                                                 |
|                          |           |                                  |            |                                  | NH <sub>3</sub> , H <sub>2</sub> O, H <sub>3</sub> O <sup>+</sup> , ICl <sub>3</sub> & I <sub>3</sub> <sup>-</sup> by VSEPR concept |
| 07.10.2016               |           |                                  |            |                                  |                                                                                                                                     |

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| दिनांक                   | व्याख्यान | प्राध्यापक का नाम                | प्रश्नपत्र | अध्याय                                     | शीर्षक                                                                                                                                   |
|                          | 18        | P.K. Verma                       | I          | Chemical Bonding                           | Determination of the shapes of molecules & ions                                                                                          |
| 08.10.2016               |           |                                  |            |                                            | viz -NH <sub>3</sub> , H <sub>2</sub> O, H <sub>3</sub> O <sup>+</sup> , ICl <sub>3</sub> & I <sub>3</sub> <sup>-</sup> by vsepr concept |
| 14.10.2016               | 8         | Dr. S.K. Verma                   | III        | Stereochemistry                            | Racemisation & resolution                                                                                                                |
| 15.10.2016               | 9         | Dr. S.K. Verma                   | III        | Stereochemistry                            | Newmann & Sawhorse projection formula                                                                                                    |
|                          | 18        | Dr. R. Sahay                     | I          | Colloidal state & macromolecules           | Protective action, Hardy-schulze law gold no. types of                                                                                   |
| 17.10.2016               |           |                                  |            |                                            | emulsion, preparation of emulsifier                                                                                                      |
| 18.10.2016               |           | Dr. R. Sahay                     |            | <b>Class Teaching</b>                      |                                                                                                                                          |
| 19.10.2016               | 19        | P.K. Verma                       | II         | Chemical Bonding                           | Odd electron bond maximum covalency                                                                                                      |
| 20.10.2016               | 20        | P.K. Verma                       | II         | Chemical Bonding                           | Hydrogen bonding, metallic bonding                                                                                                       |
| 21.10.2016               | 10        | Dr. S.K. Verma                   | III        | Stereochemistry                            | D, L & R, S Nomenclature                                                                                                                 |
| 22.10.2016               | 11        | Dr. S.K. Verma                   | III        | Stereochemistry                            | Geometrical isomerism, E-Z Nomenclature                                                                                                  |
|                          | 19        | Dr. R. Sahay                     | I          | Colloidal state & macromolecule            | Liquids in solids (Gels) classification preparation &                                                                                    |
| 24.10.2016               |           |                                  |            |                                            | properties Inhibition general application of colloids                                                                                    |
| 25.10.2016               |           | Dr. R. Sahay                     |            | <b>Monthly Evaluation</b>                  |                                                                                                                                          |
| 26.10.2016               | 21        | P.K. Verma                       | II         | Gen. Studies of s & p Block element        | Discussion on I & II <sup>nd</sup> Group Element                                                                                         |
| 02.11.2016               | 22        | P.K. Verma                       |            | Gen. Studies of s & p Block element        | Discussion on I & II <sup>nd</sup> Group Element                                                                                         |
| 03.11.2016               | 12        | Dr. S. K. Verma                  | III        | Stereochemistry                            | Conformations of Ethane & n-Butane                                                                                                       |
| 04.11.2016               | 13        | Dr. S.K. Verma                   | III        | Carboxylic Acids                           | Structure of carboxyl group, Acid strength                                                                                               |
|                          | 20        | Dr. R. Sahay                     | I          | Colloidal State & macromolecules           | Determination of molecular weight of macromolecules                                                                                      |
|                          |           |                                  |            |                                            | by osmotic pressure & viscosity method, concept of                                                                                       |
| 05.11.2016               |           |                                  |            |                                            | micelles & critical micelle, concentration                                                                                               |
| 08.11.2016               |           | Dr. R. Sahay                     |            | <b>Class Teaching</b>                      |                                                                                                                                          |
| 09.11.2016               | 23        | P.K. Verma                       | II         | General studies of p- block element        | Discussion of 15 & 16 <sup>th</sup> group element                                                                                        |
| 10.11.2016               | 24        | P. K. Verma                      | II         | Occurance, Extraction isolation of metals  | Ores & Metallurgy of Li                                                                                                                  |
| 11.11.2016               | 14        | Dr. S.K. Verma                   | III        | Carboxylic Acid                            | Mechanism of esterification & acetylation                                                                                                |
| 12.11.2016               | 15        | Dr. S.K. Verma                   | III        | Carboxylic Acid                            | A <sub>AC</sub> <sup>2</sup> & B <sub>AC</sub> <sup>2</sup> Mechanism of ester hydrolysis                                                |
| 15.11.2016               | 21        | Dr. R. Sahay                     | I          | Colloidal state & macromolecules           | A brief introduction to conducting & light emitting polymers                                                                             |
| 17.11.2016               |           | Dr. R. Sahay                     |            | <b>Class Teaching</b>                      |                                                                                                                                          |
| 18.11.2016               | 25        | P.K. Verma                       | II         | Occurance, Extraction, Isolation of metals | Ores & Metallurgy of                                                                                                                     |
| 19.11.2016               | 26        | P.K. Verma                       | II         | Occurance, Extraction, Isolation of metals | Be & F <sub>2</sub>                                                                                                                      |

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| दिनांक                   | व्याख्यान | प्राध्यापक का नाम                | प्रश्नपत्र | अध्याय                                  | शीर्षक                                                                 |
|                          | 16        | Priyanka Mishra                  | III        | Alkyl halides & Grignard reagents       | Mechanism of nucleophilic substitution reactions of                    |
| 21.11.2016               |           |                                  |            |                                         | Alkylhalides                                                           |
| 22.11.2016               | 17        | Priyanka Mishra                  | III        | Alkyl halides & Grignard reagents       | Preparation of Grignards reagent & synthetic application               |
|                          | 22        | Dr. R. Sahay                     | I          | Chemical kinetics & catalysis           | Rate of a reaction, factor influencing the rate of reaction            |
| 23.11.2016               |           |                                  |            |                                         | such as concentration temp, pressure, solvent & catalyst               |
| 25.11.2016               |           | Dr. R. Sahay                     | I          | <b>Monthly Evaluation</b>               |                                                                        |
| 26.11.2016               | 27        | P.K. Verma                       | II         | Preparation, Properties & Structure     | Di borane                                                              |
| 28.11.2016               | 28        | P.K. Verma                       | II         | Preparation, Properties & Structure     | Borazing                                                               |
| 29.11.2016               | 18        | Priyanka Mishra                  | III        | Alkyl Halides & Grignards Reagent       | Synthetic applications of Grignards reagents                           |
| 30.11.2016               | 19        | Priyanka Mishra                  | III        | Alcohols & Ethers                       | Classification & Distinction of primary, secondary & tertiary alcohols |
|                          | 23        | Dr. R. Sahay                     | I          | Chemical Kinetic & Catalysis            | Concentration dependence of rates, mathematical                        |
| 01.12.2016               |           |                                  |            |                                         | characteristics of simple chemical reactions                           |
| 02.12.2016               |           | Dr. R. Sahay                     |            | <b>Class Teaching</b>                   |                                                                        |
| 03.12.2016               | 20        | Priyanka Mishra                  | III        | Alcohols & Ethers                       | Mechanism of dehydration of Alcohols                                   |
| 06.12.2016               | 21        | Priyanka Mishra                  | III        | Alcohols & Ethers                       | Isomerism of propanols, Butanols & Pentanols                           |
| 07.12.2016               | 24        | Dr. R. Sahay                     | I          | Chemical Kinetic & catalysis            | Zero order, first, second & pseudo order reaction                      |
|                          | 25        | Dr. R. Sahay                     | I          | Chemical Kinetic & catalysis            | Determination of the order of reaction, differential method,           |
| 08.12.2016               |           |                                  |            |                                         | method of integration                                                  |
| 09.12.2016               | 29        | P.K. Verma                       | II         | Preparation, Structure & Properties     | Hydrazine                                                              |
| 12.12.2016               |           | P.K. Verma                       |            | <b>Class Teaching</b>                   |                                                                        |
| 14.12.2016               | 22        | Priyanka Mishra                  | III        | Alcohols & Ethers                       | Industrial preparation & Reaction of glycerol                          |
| 15.12.2016               | 23        | Priyanka Mishra                  | III        | Alcohols & Ethers                       | Williamson's synthesis formation & cleavage of oxonium salts           |
| 16.12.2016               | 26        | Dr. R. Sahay                     | I          | Chemical Kinetics & Catalysis           | Method of integration, Half-life period isolation method               |
|                          | 27        | Dr. R. Sahay                     | I          | Chemical Kinetics & Catalysis           | Radioactive decay as a first order phenomenon,                         |
| 17.12.2016               |           |                                  |            |                                         | experimental method for the studies of chemical kinetics               |
| 19.12.2016               | 30        | P.K. Verma                       | II         | Preparation, Properties & Structure     | Interhalogens, Polyhalides                                             |
| 20.12.2016               |           | P.K. Verma                       |            | <b>Class Teaching</b>                   |                                                                        |
| 21.12.2016               | 24        | Priyanka Mishra                  | III        | Alcohols & Ethers                       | Crown Ethers                                                           |
| 22.12.2016               | 25        | Priyanka Mishra                  | III        | General reactions of carbonyl compounds | Mechanism of addition of sodium bisulphate & HCN                       |
|                          | 28        | Dr. R. Sahay                     | I          | Chemical Kinetics & Catalysis           | Effect of temperature on rate of reaction arrhenius                    |

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| 24.12.2016               |           |                                  |     |                                               | concept of activation energy                                                            |
|                          | 29        | Dr. R. Sahay                     | I   | Chemical Kinetics & Catalysis                 | Simple collision theory based on hard sphere model,                                     |
| 26.12.2016               |           |                                  |     |                                               | transition state theory                                                                 |
| 27.12.2016               | 31        | P.K. Verma                       | II  | Structure & Basicities                        | Fluorides of xenon                                                                      |
| 28.12.2016               |           | P.K. Verma                       |     | <b>Monthly Evaluation</b>                     |                                                                                         |
| 29.12.2016               | 26        | Priyanka Mishra                  | III | Reactions of carbonyl compounds               | Aldol, Cannizzaro reaction                                                              |
| 30.12.2016               | 27        | Priyanka Mishra                  | III | Reactions of carbonyl compounds               | Wolff- Kishner reduction, Clemmensen reduction                                          |
|                          | 30        | Dr. R. Sahay                     | I   | Chemical kinetics & catalysis                 | Expression for the rate constant based on equilibrium                                   |
| 31.12.2016               |           |                                  |     |                                               | constant & thermodynamic aspects                                                        |
|                          | 31        | Dr. R. Sahay                     | I   | Chemical kinetics & catalysis                 | Characteristics of catalysed reactions, classification of                               |
| 02.01.2017               |           |                                  |     |                                               | catalysis industrial catalysis & enzyme kinetics                                        |
| 03.01.2017               | 32        | Pradeep Verma                    | II  | Structure and basicities                      | oxyacids of B                                                                           |
| 04.01.2017               |           | Pradeep Verma                    |     | <b>Class Teaching</b>                         |                                                                                         |
| 06.01.2017               | 28        | Priyanka Mishra                  | III | General Reactions of carbonyl compounds       | Catalytic reduction: $\text{LiAlH}_4$ , Meerwein-Ponndorf-Verley reduction              |
| 07.01.2017               | 29        | Priyanka Mishra                  | III | Compound containing reactive methylene group  | Preparation & Synthetic uses of acetoacetic ester                                       |
|                          | 32        | Dr. R. Sahay                     | I   | Mathematical Concepts & Computers             | Logarithmic reaction curve sketching linear graphs & calculation of slopes,             |
| 09.01.2017               |           |                                  |     |                                               | Differential of function $f(x)$ , $e^x$ , $x^x$ , $\sin x$ , $\log x$ , maxima & minima |
| 10.01.2017               | 33        | Dr. R. Sahay                     | I   | Mathematical Concepts & Computers             | Partial Differential & reciprocity relations integration of some relevant functions     |
| 11.01.2017               | 33        | P.K. Verma                       | II  | Structure and basicities                      | Oxyacids of P                                                                           |
| 12.01.2017               |           | P. K. Verma                      |     | <b>Class Teaching</b>                         |                                                                                         |
|                          | 30        | Priyanka Mishra                  | III | Compounds containing reactive methylene group | Keto-enol tautomerism preparation of malonic ester synthetic uses of                    |
| 13.01.2017               |           |                                  |     |                                               | malonic ester                                                                           |
| 16.01.2017               | 31        | Priyanka Mishra                  | III | Compounds containing reactive methylene group | Synthetic uses of malonic ester                                                         |
| 17.01.2017               | 34        | Dr. R. Sahay                     | I   | Mathematical Concepts & Computer              | Permutation & Combinations, Factorials                                                  |
| 18.01.2017               | 35        | Dr. R. Sahay                     | I   | Mathematical Concepts & Computer              | General information to computer different component of computer                         |
| 19.01.2017               | 34        | P.K. Verma                       | II  | Structure and Basicities                      | Oxyacids of S                                                                           |
| 20.01.2017               |           | P.K. Verma                       |     | <b>Class Teaching</b>                         |                                                                                         |
| 21.01.2017               | 32        | Priyanka Mishra                  | III | Nitrogen Containing Compounds                 | Preparation & Distinction between alkyl nitrites                                        |
| 23.01.2017               | 33        | Priyanka Mishra                  | III | Nitrogen Containing Compounds                 | Alkyl cyanides & alkyl isocyanides                                                      |
|                          | 36        | Dr. R. Sahay                     | I   | Mathematical Concept & Computer               | Hardware & software, input-output devices                                               |

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