

## REVISED PRE-DIPLOMA SYLLABUS FOR PHYSICS

1. **Kinematics:** Comprehend the concept of Rest and Motion, Differentiate between uniform & non-uniform motion, Define the term Speed, Velocity and Acceleration and their SI units, represent different types of motion graphically, derive equations of motion by graphical method, Comprehend uniform circular motion, solve simple problems based on related concepts, explore different kinds of motions in everyday situations.
2. **Force & Motion:** Define the terms Force and identification of different type of forces in nature, Use vector addition to explain balanced and unbalanced forces, Newton's three Laws of Motion, Applications of Newton's three Laws of Motion in day to day life, simple problems based on Laws of Motion, Mathematical Expression of Newton's Laws of Motion, , Terms like Inertia, Momentum & their SI units, Principle of Conservation of Momentum, Application of Principle of Conservation of Momentum, Concept of Collision.
3. **Magnetism:** Properties of Magnets & Magnetic Materials, permanent magnet & electromagnet & their uses, Magnetic Field around current carrying conductor, Right Hand Grip rule, Force & Factors affecting the force upon current carrying conductor kept in Magnetic Field, Fleming's Left Hand rule.
4. **Gravitation:** Universal law of Gravitation, Newton's law of Gravitation in mathematical expression, Gravitational Field Strength, Equations related to Motion in Gravitational field, Escape Velocity & Orbital Velocity, Elementary Concepts of Satellite Launch.
5. **Electromagnetic Induction:** Phenomenon of Electromagnetic induction, Fleming's Right Hand rule, Magnitude of current induced in a conductor placed in the magnetic field, working of electric generator, working of transformer, meaning of Alternating current, Transmission of Electric Energy from one place to another place & electric power at high voltage.
6. **Light:** Nature of Light & Light waves, Phenomenon of Reflection of Light & Refraction of Light, Real & Virtual Images, Refractive index, Optical density and their co-relation with speed of Light, Spherical Lenses & their features, Magnification, power of lenses.
7. **Sound:** Sound generation, its travel & detection and perceiving & hearing, Audible Sound & Ultrasound Waves, Terms like Frequency, Wavelength, Speed of Sound & relation between them, Concept of Wave motion, Transverse & Longitudinal wave, Sound & Noise, Terms like Pitch, Loudness, Quality of Sound, Relation between Pitch of Sound & Frequency.
8. **Work, Energy & Power:** Terms Work, Energy & Power, Type of Energy, Energy Transformations & Law of Conservation of mechanical Energy, Sources of Energy as renewable & nonrenewable, Uses of Solar, Wind, geothermal & Nuclear Energy; their advantages and limitations.

### REVISED PRE-DIPLOMA SYLLABUS FOR CHEMISTRY

1. **Atomic Structure:** Structure of Atom, Concept of Mass No. & Atomic No, Types of Nuclei (Isotope & Isobar), Nuclear Stability (Mass defect & Binding Energy)
2. **Chemical Bonding:** Definition & Types of Chemical Bond, Formation & Properties of Covalent Bond, Formation & Properties of Ionic Bond, Formation & Properties of Co-ordinate Bond
3. **Periodic Table And Periodic Properties:** Long form of Periodic Table, Concept of Nuclear charge, Atomic size and screening effect and its trends, Ionization potential and electron affinity, Electronegativity & Valency, Metallic and Non-metallic character
4. **Electrolysis/ Electrochemistry:** Electrolytes and Non-electrolytes, Elementary Study of migration of ions, Faraday's Law of Electrolysis, Electrochemical Cell, Daniell Cell, EMF Cell, Electrochemical Series
5. **Mole Concept & Stoichiometry:** Idea of Mole Concept, Law of Chemical Combination, Gay Lussac's Law, Arogadro's Law, Atomicity, Relative Atomic weight & molecular weight, Percentage of Composition, Empirical and Molecular Formulae, Types of Chemical Reaction
6. **Study of Acids, Bases & Salts:** Definitions of Acids, Bases & Salts, Types of Salts & their formation, Theory of Ionization (Arrhenius Theory), PH & POH, Buffer Solution, Solubility product and Common ion Effect
7. **States of Matter:** Measurable properties of Gases, Boyle's Law of Gas, Charles Law of Gas, General Gas Equation, Application of Gas Laws
8. **Water Technology:** Structure of Water & its sources, Types of Water, Types of Harnesses, Purification of water
9. **Corrosion:** Definition and types of Corrosion, Factors affecting Corrosion, Corrosion Control
10. **Fuels:** Definition of Fuel & types of Fuel, Characteristics of Fuel, Refining of Petroleum



### REVISED PRE-DIPLOMA SYLLABUS FOR MATHEMATICS

1. **Number System:** Natural Numbers, Integers, Rational Numbers, Irrational Numbers, Real Numbers & Complex Numbers. Comparison of Rational and Irrational Numbers.
2. **Algebra:** Law of Indices, Surds, Mixed surds, Rationalizing Factor, Simplification of expression using laws of surds & indices. Definition and properties of logarithms such as  $\log_a(mn) = \log_a m + \log_a n$ . Problems based on definition & properties including proof of the properties. Ratio and Proportions, Componendo and dividendo. Solution of Algebraic Equations in one and two variables. Solution of Quadratic Equations. Number of Roots based on discriminant, Word Problem leading to simultaneous equations. Work and Time Problems, Problems on relative velocity, Percentage Calculation, Profit and Loss problems, Discount problems.
3. **Euclid Geometry:** Similarity, Basic proportionality theorem, Similar Triangles, Pythagoras Theorem, Tangent and its properties, number of Tangents from a point, internal and external touching of circles, Angle Subtended by an arc at center and at a point on the circle.
4. **Co-ordinate Geometry:** Concept of coordinates on a plane, distance between points, coordinates of a point dividing the line joining two points in a given ratio, slope of a line, intercepts made by a line, equation of a line (different forms). Introduction to Three dimensional Geometry (Concept of Coordinates)
5. **Trigonometry:** Definition of Trigonometric ratios, trigonometric ratios in terms of coordinates, trigonometric identities, Values of Trigonometric ratios for standard angles.
6. **Vector Algebras:** Definition of a Vector and representation of Vectors, Scalar products of Vectors, Vector products of vectors, Triple vector and triple scalar product of vectors. Applications.
7. **Permutations and Combinations:** Counting Theorem, Definition of Permutations and Combinations, Factorial of a number, Formula for  ${}^nP_r$ ,  ${}^nC_r$ . Permutation of items when items are repeated.
8. **Mensuration:** Areas of Triangles, Rectangles, Regular polygons, Sector, Length of the Arc, Surface Area and Volumes of Cylinder, Cuboid, Cone and Sphere

## REVISED PRE-DIPLOMA SYLLABUS FOR ENGLISH GRAMMAR

1. Different kind of Sentences: Simple, Compound, Complex & Relative clauses
2. Different kind of Principals, co-ordinates, sub-ordinates.
3. The Tenses:
  - a) Present , Past & Future Tenses
  - b) Sequence of Tenses
4. Articles: Use & omission of 'a, an, the' (advance level)
5. Prepositions: Different uses indicating 'Time, Place & Direction'
6. Clauses: Proper usage & synthesis
7. Voice: Statements, Questions, indirect objects, negatives (advance level)
8. Modal Auxiliaries: Use of 'may, might, must, etc'
9. Word formation: Nouns, Adjectives, Verbs & Adverbs
10. Question formation: Tag Questions
11. Punctuation: Usage
12. Reported Speech: Statements, questions, commands, request, exclamation
13. Non-finites: Infinitives, Gerunds, Participles
14. Reading Skills: Comprehension
15. Writing Skill:
  - a) Essay Writing
  - b) Letter Writing
  - c) Summery/ Paragraph Writing