

# Indian Engineering Olympiad

## SYLLABUS FOR FIRST YEAR STUDENTS (Common to all Streams)

### Verbal Ability:-

English grammar, Synonyms, Antonyms, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.

### Numerical Ability:-

Number Systems; Linear Equations; Percentages, Profit and loss; Simple interest and Compound Interest; Ratio, Proportion and variation; Averages and Mixtures; Time and Work; Time, speed and Distance; Numerical Series and Sequences; Permutations and combinations; Probability.

### Physics:-

Measurements,

Machines:- Work, Energy and Power

Motion:- Kinematics, Laws of Motion, , Rotational Motion, Gravitation,

Properties of Matter:-Properties of Solids and Liquids, Kinetic Theory of Gases

Magnetism and Electromagnetism:-

Electrostatics, Current Electricity, Magnetic effects of Current and Magnetism, Electromagnetic Induction and Alternating Currents, Electromagnetic Waves.

Thermodynamics, Oscillations and Waves, Optics, Atoms and Nuclei, Electronic Devices, Communication Systems

### Chemistry:-

Physical Chemistry: Solid, Gaseous and Liquid States, Energetics, Chemical Equilibrium, Electro chemistry, Chemical Kinetics, Atomic Structure and Chemical Bonding, Solutions, Surface Chemistry, Nuclear Chemistry

Inorganic Chemistry: Isolation/Preparation and Properties of Non-metals- Transition Elements (3D Series), Preparation and Properties of Compounds- Ores and Minerals, Extractive Metallurgy, Principles of Qualitative Analysis

### Mathematics:-

Calculus: Limits, Continuity and Differentiability, Application of Derivatives, Definite Integration, Indefinite Integration,

Algebra: Sets, Relations and Functions, Binomial Theorem, Matrices, Determinants, Complex Numbers, Theory of Equations, Mathematical Induction, Permutation and Combination, Exponentials and Logarithms,

Geometry: Circles, Ellipse, Parabola, Hyperbola, Pairs of Straight Lines, Triangle and its properties, Three Dimensional Geometry

Trigonometry: Trigonometric Ratios and Identities, Heights and Distances, Trigonometric Equations

Other Topics: Vectors, Differential Equation