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KEAM Syllabus

Mathematics

Algebra

- Sets, Relations, and Functions
- Complex Numbers
- Sequences and Series
- Permutations, Combinations, Binomial Theorem and Mathematical Induction
- Matrices and Determinants
- Linear Inequalities
- Mathematical Reasoning

Trigonometry

Trigonometric functions and Inverse Trigonometric functions

Geometry

- Conic sections
- Three Dimensional Geometry
- Cartesian System of Rectangular Coordinates
- Lines and Family of lines
- Circles and Family of circles
- Vectors

Statistics

Statistics and probability

Calculus

- Definite Integrals
- Application of Derivatives
- Functions, Limits, and continuity
- Differential Equations
- Differentiation
- Indefinite Integrals

Physics

- Atomic Nucleus
- Waves
- Dual Nature of Matter and Radiations
- Physical-world and Measurement
- Kinematics
- Description of Motion in One Dimension
- Description of Motion in Two and Three Dimensions
- The motion of the System of Particles and Rigid Body Rotation
- Gravitation
- Mechanics of Solids and Fluids
- Heat and Thermodynamics
- Oscillations
- Laws of Motion
- Electrostatics
- Current Electricity
- Magnetic Effect of Current and Magnetism
- Electromagnetic Induction and Alternating Current
- Electromagnetic Waves
- Optics
- Work, Energy, and Power
- Solids and Semiconductor Devices
- Principles of Communications

Chemistry

- Surface Chemistry – Adsorption, Colloids
- Environmental Chemistry and Chemistry in Everyday Life
- Basic Concepts and Atomic Structure – Laws of chemical combination, Atomic structure
- Bonding and Molecular Structure
- States of Matter – Gaseous state, Liquid state, Solid-state
- Periodic Properties of Elements and Hydrogen – Classification of elements, Hydrogen
- S-Block Elements and Principles of Metallurgy – Alkali metals, Alkaline earth metals, Principles of metallurgy
- P-Block Elements – General characteristics of p-block elements, Boron, Silica, Group 18 elements
- D-Block and F-Block Elements – d-Block elements, f-Block Elements: Lanthanides
Thermodynamics – System and surrounding, First law of thermodynamics, Second law of thermodynamics
- Chemical Equilibrium – Physical and chemical equilibria, Equilibria involving chemical systems, Concepts of acids and bases
- Solutions – Types of solutions, Colligative properties
- Redox Reactions and Electrochemistry – Oxidation and reduction, Faraday's laws of electrolysis, Corrosion and its prevention
- Chemical Kinetics
- Coordination Compounds and Organometallics
- Basic Principles, Purification, and Characterization of Organic Compounds
- Hydrocarbons – Classification of hydrocarbons, Alkanes and cycloalkanes, Alkenes and alkynes Aromatic hydrocarbons
- Organic Reaction Mechanism – Electronic displacement in a covalent bond, Common types of organic reactions
- Stereochemistry – Stereoisomerism
- Organic Compounds with Functional Groups Containing Halogens – Haloalkanes and haloarenes, Polyhalogen compounds
- Organic Compounds with Functional Groups Containing Oxygen – Alcohols, Phenols, Ethers, Some commercially important compounds, Aldehydes, and ketones, Carboxylic acid

- Organic Compounds with Functional Groups Containing Nitrogen – Amines
Polymers and Biomolecules – Polymers, Biomolecules, Reducing and non-reducing sugars, Polysaccharides, Proteins, Vitamins