Syllabus
for
IISER Aptitude Test 2013

Biology

Diversity in the living world, Biological classification, Plant kingdom, Animal kingdom, Morphology of flowering plants, Anatomy of flowering plants, Structural organization in animals, Cell – the unit of life, Biomolecules, Cell cycle and cell division, Transport in plants, Mineral nutrition, Photosynthesis in plants, Plant growth and development, Digestion and absorption, Breathing and exchange of gases, Body fluids and circulation, Excretory products and their elimination, Locomotion and movement, Neural control and coordination, Chemical co-ordination and integration, Reproduction in organisms, Sexual reproduction in flowering plants, Human reproduction, Reproductive health, Principles of inheritance and variation, Molecular basis of inheritance, Evolution, Human health and disease, Strategies for enhancement in food production, Microbes in human welfare, Biotechnology – principles, processes and applications, Organisms and populations, Ecosystems, Biodiversity and conservation, Environmental issues.

Chemistry

Some basic concept of Chemistry, Structure of Atom, Classification of Elements and Periodicity in Properties, Chemical Bonding and Molecular Structure, States of Matter, Thermodynamics, Equilibrium, Redox Reactions, Hydrogen, The s-block Elements, The p-block Elements, Organic Chemistry - Some Basic Principles and Techniques, Hydrocarbons, Environmental Chemistry, The solid state, Solutions, Electrochemistry, Chemical Kinetics, Surface chemistry, General principles and processes of isolation of elements, The p-block elements, The d- & f-block elements, Coordination compounds, haloalkanes and haloarenes, alcohols, phenols and ethers, aldehydes, ketones and carboxylic acids, Organic compounds containing nitrogen, amines, Bio-molecules, Polymers, Chemistry in everyday life.

Mathematics

Sets, Relations and functions, Trigonometric Functions, Inverse Trigonometric Functions, Principle of Mathematical Induction, Complex Numbers and Quadratic Equations, Linear Inequalities, Permutations and Combinations, Binomial Theorem, Sequences and Series, Straight Lines, Conic Sections, Basic Three Dimensional Geometry, Mathematical Reasoning, Statistics, Probability, Matrices, Determinants, Limits, Continuity and Differentiability, Application of Derivatives, Integrals, Applications of integrals, Vectors and vector algebra.

Physics

Physical World, Units and Measurement, Motion in straight line, Motion in a plane, Laws of Motion, Work, Energy and Power, Motion of Systems of particles and Rigid body, Gravitation, Mechanical properties of solids, Mechanical properties of fluids, Thermal properties of matter, Thermodynamics, Behavior of perfect gas and kinetic energy, Oscillations, Waves, Electric charges and fields, Electrostatic potential and capacitance, Magnetic effect of current and magnetism, Electromagnetic Induction, Alternating Current, Electromagnetic Waves, Ray optics and optical instruments, Wave optics, Dual Nature of Radiation and Matter, Atoms, Nuclei, Semiconductor electronics – materials, devices and simple circuits, Communication Systems.