Biology:

In addition to following, general understanding of Science topics studied till Class 10 and Mathematics topics studied till Class 12 is expected.

I. Diversity of Living Organisms

The Living World:

What is living? Biodiversity; Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature and tools for study of taxonomy.

Biological Classification:

Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups: Lichens, Viruses and Viroids.

Plant Kingdom:

Salient features and classification of plants into major groups - Algae, Bryophyta, Pteridophyta, Gymnospermae and Angiospermae.

Animal Kingdom:

Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level.

II: Structural Organization in Animals and Plants

Morphology and anatomy of Flowering Plants:

Morphology and modifications: Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Anatomy and functions of different tissues and tissue systems.

Structural Organisation in Animals:

Animal tissues; Morphology, anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of animals.

III. Cell: Structure and Function

Cell-The Unit of Life: Cell theory and cell as the basic unit of life:

Structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; structure and function of all cell organelles. Cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient.

Biomolecules:

Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzymes- types, properties, enzyme action.

Cell Cycle and Cell Division:

Cell cycle, mitosis, meiosis and their significance.

IV. Plant Physiology

Transport in Plants:

Movement of water, gases and nutrients; cell to cell transport, diffusion, facilitated diffusion, active transport; plant-water relations, imbibition, water potential, osmosis, plasmolysis; long distance transport of water - Absorption, apoplast, symplast, transpiration pull, root pressure and guttation; transpiration, opening and closing of stomata; Uptake and translocation of mineral nutrients - Transport of food, phloem transport, mass flow hypothesis.