

# BITSAT Biology Syllabus

## **Cell- Unit of Life, Structure and Function**

Cell wall; Cell membrane; Endomembrane System, Mitochondria, Cell Cycle (meiosis and mitosis); Structural differences between prokaryotic and eukaryotic; plant and animal cells; Enzymes- Types, properties along with chemical nature and action; Biomolecules- Function and structure of Proteins, Lipids, Nucleic acid and Carbohydrates

## **Diversity in Living World**

What is living; Taxonomic categories and aids; Systematics and Binomial system of nomenclature; Meaning and reference of Biology to mankind; Salient Features of Plant and Animal Kingdom; Introductory classification of living organisms (Two-kingdom system, Five-kingdom system)

## **Genetics and Evolution**

DNA –its organization and replication; Transcription and Translation; Theories and evidences of evolution, including Modern Darwinism; Gene expression and regulation along with DNA fingerprinting; Linkage and Crossing over; Inheritance patterns of hemophilia and blood groups in humans; Mendelian inheritance; Chromosome theory of inheritance; Gene interaction; Incomplete dominance; Codominance; Complementary genes; Multiple alleles.

## **Reproduction, Growth and Movement in Plants**

Sexual Reproduction including development of male and female gametophytes, Pollination (Types and agents), Fertilization, Development of embryo, endosperm, seed and fruit; Apical dominance, Senescence, Abscission, Photo -periodism, Vernalisation; Growth and Movement including growth phases, Types of growth regulators and their role in seed dormancy, germination and movement; Asexual methods of reproduction and various types of movements.

## **Reproduction and Development in Humans**

Menstrual cycle, Gamete production, Fertilisation, Implantation followed by the stages of embryo development, pregnancy and parturition, birth control and contraception and also detailed study of male and female reproductive systems.

## **Structure + Function of Plants and Animals**

Morphology of a flowering plant; Tissues and tissue systems in plants; Anatomy and function of root, stem fruit and seed; types of fruit and secondary growth; detailed study of absorption and movement of water followed by mineral nutrition, the stages of photosynthesis and respiration. Locomotion and movement; Excretion system; Control and coordination (including the central nervous system, receptors, structure and function of neuron, endocrine glands and hormone action); Human physiology (including the digestive, respiratory system and process of absorption) along with body fluids and circulation.

## **Biology and Human Welfare**

Cancer; AIDS; Animal Husbandry (including poultry, livestock, fisheries, major animal diseases and their control methods, major communicable diseases of humans and their pathogens); basic features of immunology; alcohol/drug abuse during adolescence; plant breeding and tissue culture

## **Ecology and Environment**

Meaning of ecology, environment, niche and habitat; energy flow along with major types of ecosystems even the new ones like agroecosystem; ecological levels of organization (organism to biosphere); abiotic and biotic components; ecological pyramids; succession

and climax; food chain and food web; structural and physiological features in plants and animals of the desert and aquatic regions along with detailed study of Biodiversity and Environmental concerns.

### **Biotechnology and its Applications**

Microbes as ideal systems for biotechnology; Use of microbial technology in industrial production and food processing; detailed study of steps in recombinant DNA technology, application of R-DNA technology in human health and applications in industry together with agriculture.

