

## BIOLOGICAL SCIENCE

Biological Sciences question paper will be fully of objective type. There will be negative marking (one third) for wrong answer.

**General Biology:** Taxonomy and physiology, Pro-and eukaryotic Organisms; cell organelles and their function; multicellular Organization; energy transformations; internal transport systems of plants; respiration; regulation of body fluids and excretory mechanisms; cellular reproduction; Mendelian genetics and heredity; biology and populations and communities; evolution; genesis and diversity of Organisms; animal behaviour, plant and animal diseases.

**Basics of Biochemistry, Biophysics, Molecular Biology:** Buffers; trace elements in biological systems; enzymes and proteins; vitamins; biological oxidations, carbohydrates and lipids and their metabolisms; digestion and absorption; detoxifying mechanisms; plant and animal hormones and their action, nervous system, nucleic acids, nature of gene and its function, Genetic code, synthesis of nucleic acids and proteins. Enzyme mechanisms and kinetics, nucleic acid metabolism, photo synthesis.

**Structure of Biomolecules:** intra and intermolecular forces; thermodynamics and kinetics of biological systems, principles of x-ray diffraction, IR and UV spectroscopy and hydrodynamic techniques.

**Microbiology, Cell Biology and Immunology:** Classes of microOrganisms and their characterization, nutrient requirement for growth; laboratory techniques in microbiology, pathogenic microOrganisms and disease; applied microbiology; viruses, Microbial genetics. Innate and adaptive immunity, antigen antibodies. Cell theory; Cell architecture; methods of cell fractionation; cell division; types of chromosome structure; biochemical genetics- inborn errors of metabolisms; viruses and fungi; principles of processes of development.

**Mathematical Sciences:** Mathematical functions (algebraic, exponential, trigonometric), their derivatives (derivatives and integrals of simple functions) permutations and combinations.