

## **Code 13: MAJOR SUBJECT GROUP - ANIMAL BIOTECHNOLOGY**

### **(Sub-Subjects: 13.1: Animal Biotechnology, 13.2: Vety./Animal Biochemistry)**

UNIT-I: Structure of prokaryotic and eukaryotic cells, cell wall, membranes, cell organelles, organization and functions, chromosome structure and functions, cell growth division and differentiation. Sub unit structure of macromolecules and supermolecular systems. Self assembly of sub units, viruses, bacteriophage, ribosomes and membrane systems.

UNIT-II: Scope and importance of biochemistry in animal sciences, cell structure and functions. Chemistry and biological significance of carbohydrates, lipids, proteins, nucleic acids, vitamins and hormones. Enzymes— chemistry, kinetics and mechanism of action and regulation. Metabolic inhibitors with special reference to antibiotics and insecticides. Biological oxidation, energy metabolism of carbohydrates, lipids, amino acids and nucleic acids. Colorimetry, spectrophotometry, chromatography and electrophoresis methods.

UNIT-III: Chemistry of antigens and antibodies and molecular basis of immune reaction, radio-immune assay and other assays. Chemistry of respiration and gas transport, water and electrolyte metabolism. Deficiency diseases, metabolic disorders and clinical biochemistry. Endocrine glands, biosynthesis of hormones and their mechanism of action.

UNIT-IV: History of molecular biology, biosynthesis of proteins and nucleic acids, genome organization, regulation of gene expression, polymerase chain reaction, basic principles of biotechnology applicable to veterinary science gene sequence, immunodiagnosics, animal cell culture, in vitro fertilization. Sub-unit vaccines: Principles of fermentation technology. Basic principles of stem cell and animal cloning.