

BIOLOGY

Subject Code : FTC301

Full Marks : 100 (80+20)

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3 - 2

CONTENT

- 1. Diversity in Living World (04 hrs)**
Diversity of living organisms
Classification of the living organisms (five kingdom classification, major groups and principles of classification within each kingdom).
Systematic and binomial System of nomenclature Salient features of animal (non-chordates up to phylum level and chordates up to class level) and plant (major groups; Angiosperms up to class) classification, viruses, viroids, lichens Botanical gardens, herbaria, zoological parks and museums.
- 2. Structural Organization in Animals and Plants (04 hrs)**
Tissues in animals and plants.
Morphology, anatomy and functions of different parts of flowering plants: Root, stem, leaf, inflorescence, flower, fruit and seed.
Morphology, anatomy and functions of different systems of an annelid (earthworm an insect (cockroach) and an amphibian (frog)).
- 3. Cell: Structure and Function (06 hrs)**
Cell: Cell theory; Prokaryotic and encaryotic cell, cell wall, cell membrane and organelles (Plastids, mitochondria, endoplasmic reticulum, Golgi bodies/ dicytosomes, ribosomes, lysosomes, vacuoles, centrioles) and nuclear organization.
Mitosis, meiosis, cell cycle.
Basic chemical constituents of living bodies.
Structure and functions of carbohydrates, proteins, lipids and nucleic acids.
Enzymes: types, properties and function.
- 4. Plant Physiology (06 hrs)**
Movement of water, food, nutrients and gases, Plants and Water Mineral nutritious Respiration, Photosynthesis, Plant growth and development.
- 5. Plant Cell Culture and Application (06 hrs)**
Introduction
Cell and Tissue Culture Techniques
Application of Cell and Tissue Culture
Gene Transfer Method in Plants
Transgenic Plants with Beneficial Traits
Diagnostics in Agriculture and Molecular Breeding

Bioethics in Plant Genetic Engineering

- 6. Animal Cell Cultures and Applications** (06 hrs)
- Introduction
 - Animal Cell Culture Techniques
 - Characterization of Cell Process
 - Applications of Animal Cell Culture
 - Stem Cell Technology
 - Bioethics of Genetic Engineering in Animals
- 7. Introduction to Biotechnology & Biomolecules** (05 hrs)
- Fundamentals of Biochemical Engineering
 - Biotechnology and Society
 - Building Blocks of Bimolecular Structure and dynamics
 - Structure and function of Macromolecules
 - The basic unit of life
 - Cell Growth and development
 - Cellular Techniques
 - Principles of Genetics
 - Genome Function Genetics
 - Genetical Techniques
- 8. Protein and Gene Manipulation** (05 hrs)
- Introduction to the world of Proteins
 - 3-D Shape of Genies
 - Structure Function relationship in Proteins
 - Purification of Proteins
 - Charticterzation of Proteus
 - Proteins based products
 - Designing Proteins
 - Proteomics