F. Y. B. Sc. Sem - I

BIOSCIENCE Paper-I

CYTOLOGY & GENETICS

Unit – I Cell:

- A unit of life.
- Cell size and shape.
- Types of cell.
- Eukaryotic cell organization.
- Differences between Prokaryotic and eukaryotic cell.

Unit – 2 Types, distribution, ultra structure, composition and functions of cell organelles

- Mitochondria,
- Golgi body,
- Endoplasmic reticulum,
- Chloroplast.

Unit – 3 Introduction to genetics

- Mendel's law: Mono hybrid and di-hybrid ratio.
- Epistatis
- Gene concept: Morgan classical concept.
- Modern concept of gene.

F. Y. B. Sc. Sem - I

BIOSCIENCE Paper-II

Introduction to microbiology

Unit – 1 Introduction to microbiology.

- History and scope of Microbiology.
- Contribution of scientist in various field of microbiology: Robert Koch, Louis Pasteur, Antony Van Leeuwenhoek, Joseph Lister, Edward Jenner, Alexander Fleming.
- Microbes and their current position in living world.

. **Unit – 2** Introduction to Microscope:

- Simple and compound microscope
- working principle and their uses

Unit – 3 Stain and staining techniques.

- Dyes and stains.
- Types of stain
- Mechanism of staining: Simple staining, negative staining, gram staining.

F. Y. B. Sc. Sem-2

BIOSCIENCE Paper-I

CYTOLOGY & GENETICS

Unit -1 Structure and factions of cell organelles:

- Cell membrane
- Ribosome
- Nucleus
- Lysosome

Unit -2 Chromosome and cell cycle:

- Chromosome : Morphology & types,
- Cell cycle: Mitosis and meiosis.
- Chromosomal aberrations: Deletion, Inversion, Duplication and Translocation.
- Non disjunction and aneuploidy.

Unit -3 Multiple alleles:

- Blood group inheritance
- Sex linked inheritance: Haemophilia, color blindness.

F. Y. B. Sc. Sem-2

BIOSCIENCE Paper-II

Introduction to microbiology

Unit-1 Introduction to prokaryotes:

- Ultra structure of prokaryotic cell,
- characteristics of prokaryotic cell.
- Types of bacteria
- morphology of bacteria (size & shape)

Unit-2 Introduction to Protests, Yeast and mold(Fungi)

- General characteristics & outline classification of protozoan, algae.
- General characteristics & outline classification of Yeast and mold(Fungi)

Unit-3 Introduction to sterilization, preservation, pasteurization and sanitization.

Antiseptic and disinfectant.

F.Y.B.Sc. Sem – I

Practical

Paper – I & II

1. Introduction to Lab apparatus.
2. Introduction to microscope.
3. Microscopic examination of water infusion.
4. Simple staining (Positive staining)
5. Negative staining.
6. Gram staining.
7. Contribution of scientists: Robert Koch, Louis Pasteur, Antony Van Leeuwenhoek, Joseph Lister, Edward Jenner, Alexander Fleming.
8. Study of permanent slides as per theory.

F.Y.B.Sc. Sem – II

Practical

Paper – I & II

1. Study of nucleus and nucleolus by staining of onion peel.
2. Study of mitotic cell division in onion root tip.
3. Microscopic study of various size and shape of bacteria.
4. Study of different types of blue green algae.
5. Introduction to antiseptic, disinfectant, preservative and sanitizing agent.
6. Study of various types of fungi (by chart, image)
7. Study of microscopic protozoa.
8. Study of permanent slides as per theory.

Reference books:

Cell & Molecular biology by De'Robertis
Microbiology, by Pelzar, Chan & Kreig (Tata McGraw-Hill)
Genetics by Winchester
Cytology by Agrawal (S Chand pub)
Genetics by Arora & Shandhu (Himalaya)
Elementary Microbiology, Vol. I & II by H.A.Modi (Ekta prakasan)