

BIOTECHNOLOGY
(Subject Code-045)
Syllabus for Purpose of Examinations 2021-22

CLASS- XI (2021-22)
COURSE STRUCTURE (THEORY)

Units	Term-I	Marks
Unit-I	Biotechnology: An Overview	5
Unit-II	Molecules of Life	20
Unit-III	Genetics and Molecular Biology	10
	Term-II	
Unit-III	Genetics and Molecular Biology (Contd.)	10
Unit-IV	Cells and Organisms	25
	Practical (Term-I)	15
	(Term-II)	15
	Total	100

CLASS XI
(Theory)

Total Marks: 70 (Term I+II)

TERM-I

Unit-I Biotechnology: An overview **5 Marks**

Chapter 1: Biotechnology: An Overview

Historical Perspectives, Technology and Applications of Biotechnology, Global market and Biotech Products.

Unit-II Molecules of Life **20 Marks**

Chapter 1: Biomolecules: Building Blocks

Building Blocks of Carbohydrates - Sugars and their Derivatives, Building Blocks of Proteins - Amino Acids, Building Blocks of Lipids - Simple Fatty Acids, Glycerol and Cholesterol, Building Blocks of Nucleic Acids – Nucleotides.

Chapter 2: Macromolecules: Structure & Function

Carbohydrates - The Energy Givers; Proteins - The Performers; Enzymes - The Catalysts; Lipids and Biomembranes - The Barriers; Nucleic Acids - The Managers.

Unit-III Genetics and Molecular Biology

10 Marks

Chapter 1: Concepts of Genetics

Historical Perspective, Multiple Alleles, Linkage and Crossing Over, Genetic Mapping.

TERM-II

Unit-III Genetics and Molecular Biology

Chapter 2: Genes and Genomes: Structure and Function

10 Marks

Discovery of DNA as Genetic Material, DNA Replication, Fine Structure of the Genes, From Gene to Protein, Transcription – The Basic Process, Genetic Code, Translation, Mutations, Human Genetic Disorders.

Unit IV: Cells and Organisms

25 Marks

Chapter 1: The Basic Unit of Life

Cell Structure and Components, Organization of Life

Chapter 2: Cell Growth and Development

Cell Division, Cell Cycle, Cell Communication, Nutrition, Reproduction, Immune Response in animals

PRACTICALS

Term-I

15 Marks

Practical should be conducted alongside the concept taught in theory classes

1. Preparation of buffers and pH determination
2. Sterilization techniques
3. Preparation of bacterial growth medium
4. Cell counting

The scheme of evaluation at the end of term will be as under:

One experiment	:	10 Marks
Marks viva on experiments	:	05 Marks

Term-II

15 Marks

1. Sugar Estimation using Di Nitro Salicylic Acid test (DNS test)
2. Assay for amylase enzyme
3. Protein estimation by biuret method

The scheme of evaluation at the end of term will be as under:

One experiment	:	10 Marks
Marks viva on experiments	:	05 Marks

Assessment Areas (Theory) 2021-22
Classes XI
Biotechnology (045)

Competencies	
Demonstrate Knowledge and Understanding	50%
Application of Knowledge / Concepts	30%
Analyse, Evaluate and Create	20%

Note:

- ☐ Internal choice would be provided.

Suggestive verbs for various competencies

- ☐ **Demonstrate, Knowledge and Understanding**
State, name, list, identify, define, suggest, describe, outline, summarize, etc.
- ☐ **Application of Knowledge/Concepts**
Calculate, illustrate, show, adapt, explain, distinguish, etc.
- ☐ **Analyze, Evaluate and Create**
Interpret, analyse, compare, contrast, examine, evaluate, discuss, construct, etc.