

**B.Sc ZOOLOGY SYLLABUS UNDER CBCS
FOR VI ..SEMISTER**

CORE PAPER - VI

IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

BLOCK 1 : IMMUNOLOGY

Unit- 1: Basic concepts of immunology

Cells of immune system

Unit-2 : Cells and organs of Immune system

Haematopoiesis.

Cells of the immune system and organs (Primary and Secondary lymphoid organs) of immune system.

Types of Immunity – Innate and acquired.

Unit- 3 : Antigens

Basic properties of antigens.

B and T cell epitopes, haptens, adjuvants.

Unit- 4 : Antibodies

Structure, function and types of an antibody.

Monoclonal antibodies and their production.

Antigen-antibody interactions as tools for research and diagnosis.

T-Cell and B-Cell activation.

Unit- 5 : Working of an immune system.

Structure and functions of major histocompatibility complex.

Basic properties and functions of Cytokines, Interferons and complement proteins.

Humoral and Cell mediated immunity.

Unit- 6 : Immune system in health and disease

Types of hyper sensitivity.

Concepts of autoimmunity and immunodeficiency.

Unit- 7 : Vaccines

Introduction to Vaccines and types of Vaccines.

BLOCK – II. ANIMAL BIOTECHNOLOGY

Unit- 8 : Concept and Scope of Animal Biotechnology.

Unit- 9 : Molecular Techniques in Gene manipulations

Cloning vectors - Plasmids, Cosmids, Lambda bacteriophage, YAC,

Cloning- Cloning methods (Cell, Animal and Gene cloning)

Unit-10 : Animal Cell culture & Stem cells

Equipment and materials for animal cell culture.

Applications of cell culture techniques. Stem cells- Types and their applications

Unit-12 : Transgenesis – Methods of Transgenesis

Production of Transgenic animals

Application of Transgenic animals in Biotechnology.

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**B.Sc ZOOLOGY PRACTICAL SYLLABUS UNDER CBCS
FOR VI ..SEMISTER**

**CORE PAPER - VI
IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY**

LABORATORY MANUAL & RECORD

BLOCK - 1. IMMUNOLOGY

Unit – 1 : Identification of Blood groups

Unit – 2 : Histological study of spleen, thymus and lymph nodes (through prepared slides)

Unit – 3 : Enumeration of RBC & WBC from a given blood sample

Unit – 4 : Enumeration of Differential count of WBC from a given blood sample

Unit – 5 : Demonstration of a. ELISA b. Immuno electrophoresis

Unit – 6 : Identification of Autoimmune disease through charts.

BLOCK – II: Animal Biotechnology

Unit – 7 : Study the following techniques through photographs / virtual lab

a. Southern blotting b. Western blotting c. DNA sequencing (Sanger's method) d. DNA
finger printing.

e. Identification of Vectors f. Identification of Transgenic animals

Unit – 8 : PCR demonstration /virtual lab Laboratory

Record work shall be submitted at the time of practical examination

Computer aided techniques should be adopted as per UGC guide lines.
