

**Swami Rama Himalayan University,
Swami Ram Nagar, Jolly Grant, Dehradun-248016**

Subject Code:PHDBC110

Subject Name: Advances in Biochemistry

100 Marks

TIME: 3 HRS

UNIT-I: Analytical Techniques in Biochemistry

Blotting techniques (Methodologies and applications) southern, northern and western blotting. Principle, Types & application of Chromatography, Electrophoreses, ELISA, RIA.

UNIT-II: Recombinant DNA Technology

Introduction to DNA technology and application, Cloning vector (characteristics applications) Plasmids, Phages, Cosmids, YACs, BACs and HACs, Preparation of cloning vectors, suitable markers, Isolation of nucleic acids (Plasmid, RNA & DNA). Basic steps of gene cloning, Cloning Strategies, Screening strategies of recombinants, Synthesis of cDNA, Construction of cDNA and genomic libraries, Probe labeling and hybridization

UNIT-III: Radiation Biology

Introduction to Radiation: Types of radiation- x-ray, gamma-ray, ultraviolet and LASER. Radioactivity and radiation. Physical properties of radiation- penetration potential and energy. Background radiation and sources of radiation exposure. Radioisotopes in research application

UNIT-IV Genomics:

Introduction to structural, comparative and functional genomics. Introduction to gene networks and epigenetic analysis; Basic Principles of Sequencing of genome.

Unit-V Proteomics:

Techniques used to study proteome: 2-D PAGE, MALDI-TOF, Protein sequencing, and identifying protein – protein interactions. Applications of proteomics.