**Human Genetics Semester 5th (CBCS)**

**DISCIPLINE SPECIFIC ELECTIVE (Paper 3)**

**Course Title: Recombinant DNA Technology**

**Code: DSE-HG-16-503**

**UNIT I: Enzymes used in DNA technology**

* 1. Restriction enzymes
  2. Polymerases,
  3. Ligases, Kinases
  4. Phosphatases.

**Unit II: Vectors**

2.1. Definition and properties of vector

2.2 Plasmid and plasmid based vectors

2.3 Bacteriophage and its derived vectors

2.4 Cosmids and Phagemids

**UNIT III :** **Principles and applications of blotting techniques**

3.1.Southern blotting, Northern blotting, Western blotting,

3.2.Agarose gel, Polyacrylamide gel

3.3 Polymerase chain reaction (PCR), Types and applications of PCR,

3.4 construction of cDNA

**UNIT IV: Gene Recombination and Gene transfer**

4.1 Bacterial Conjugation,

4.2 Transformation, Transduction,

4.3 Microinjection, Electroporation,

4.4 Shot Gun method

**Practicals :**

1. Principle & operation of Centrifuge

2. Principle & operation of pH meter

3. Isolation of DNA from sheep liver

4. Demonstration of southern, western and Northern Blotting techniques through Videos and

pictures.

5. Demonstration of Tissue Homogenizer