

## PAPER –II GENETICS

Max. Marks - 40+10

Time- 3 Hrs.

**Note:** Attempt five questions in all, selecting two questions from each unit.

**Question No. 1 is compulsory (short answer type).**

**Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.**

### UNIT-I

**Genetic Material:** DNA the genetic material, DNA structure and replication, DNA-Protein interaction, the Nucleosome Model, Genetic Code, Satellite and Repetitive DNA.

**Genetic Inheritance:** Mendelism: Laws of segregation and Independent Assortment; Linkage Analysis; Allelic and non-allelic interactions.

### UNIT-II

**Genetic Variations:** Mutations- spontaneous and induced; transposable genetic elements; DNA damage and repair.

**Gene Expression:** Modern concept of gene; RNA; Ribosomes; transfer of genetic information- transcription and translation (Protein Synthesis); regulation of gene expression in prokaryotes and eukaryotes; 1-D, 2-D and 3-D structure of Proteins.

**Extra Nuclear Inheritance:** Presence and function of Mitochondrial and Plastid DNA; Plasmids.