

AMB04 GENETICS

UNIT-1 GENETICS AND ORGANISM

Genetics and human affairs, Genetics and Biology, Genes and Environment, Techniques of genetic analysis.

UNIT-2 CHROMOSOME THEORY OF INHERITANCE

The chromosome theory of heredity, Sex chromosomes, Sex linkage, The parallel behavior of autosomal genes and chromosomes.

UNIT-3 MENDELIAN ANALYSIS

Mendel's laws of inheritance, Interaction of genes, Variations on dominance, Multiple alleles, Lethal alleles, Several genes affecting the same character, Penetrance and expressivity,

UNIT-4 LINKAGE

Basic eukaryotic chromosome mapping, The discovery of linkage, Recombination linkage symbolism, Linkage of genes on X chromosomes, Linkage maps, Three point testcross, Interference, Calculating recombinant frequencies from selfed dihybrids, examples of linkage maps, The X2 test mitotic segregation in humans.

UNIT-5 FINE STRUCTURE OF GENES

The concept of promoter, Coding sequence, Terminator, Induction of gene for expression.

UNIT-6 RECOMBINATION IN BACTERIA AND VIRUSES

Conjugation recombination and mapping the E. coli chromosomes, Transformation, Transduction, Chromosome mapping.

UNIT-7 BIOCHEMICAL GENETICS

Inborn errors of metabolism, one gene- one enzyme hypothesis, one gene-one protein, one gene - one polypeptide, colinearity

UNIT-8 THE EXTRANUCLEAR GENOME

The concept of extra nuclear genome in higher plants and animals, Overview of mitochondrial genome, Chloroplast genome.

UNIT-9 POPULATION GENETICS

Darwin's revolution, Variation and its modulation, The effect of sexual reproduction on variation, The sources of variation, Selection quantitative genetics

UNIT-10 PRINCIPLES OF PLANT BREEDING

Objectives, Selfing and crossing techniques, Male sterility, Incompatibility, Hybrid vigour

UNIT-11 HUMAN GENOME PROJECT

Genetic diseases in humans, Genetics and society.

References Books

1. In Introduction to genetic analysis, Griffiths, Miller, Suzuki, Lewontin and
2. Gelbart, Freeman and Company.
3. Genetics, A.V.S.S. Sambamurty, Narosa Publishing House.
4. Concepts of Genetics, Klug & Cummings, Prentice Hall.
5. Molecular Cloning, Moniatisetal, Cold Spring Harbor Laboratory

