

## III Year V Semester Botany Question Ban

Subject title: Cell Biology and Genetics Faculty Name: Noori Sultana

Long questions :15m

## Unit I

1. Ultra structure of typical plant cell
2. Structure and properties of different models of Plasma membrane
3. Watson and Cric 's model of DNA(structure, properties& functions)
4. Shape size and chemistry of Chromosome structure
5. Essay on Extra chromosomal DNA-mitochondrial & plasmid DNA

## Unit II

1. Detail process of Meiosis I
2. Mendel's Monohybrid cross
3. Dihybrid cross experiment on Pisum
4. Mendel's Laws of Inheritance
5. Modification in dihybrid ratios due to interaction of genes(epistasis, non-epistasis)
6. Account on construction of Chromosome mapping(2point & 3point test crosses)
7. Mechanism of Crossing over and theories explaining its mechanism

## Unit III

1. Mutations involving structural chromosomal aberrations(deletions, duplications, translocation & inversion)
2. Numerical changes in chromosomes-Euploidy & Aneuploidy
3. Essay on Point Mutations
4. Polyploids with example crosses
5. Properties of Genetic code
6. Prokaryotic and Eukaryotic Replication of DNA
7. Steps involved in Transcription of protein synthesis
8. Steps involved in Translation

## SHORT QUESTIONS : 4M

## Unit I

1. Fine structure of cell wall
2. Cell organelles (plastids, mitochondria, Golgi complex, ER, Nucleus, ribosomes)
3. Messelson and Stahl's experiment
4. Polytene/ giant chromosomes, B chromosomes
5. Lamp brush chromosomes
6. Plasmids
7. Euchromatin and Heterochromatin
8. karyotype
9. Types of RNA

## Unit II

1. Prophase I
2. Complete and incomplete linkage
3. Duplicate and collaborating genes
4. Supplementary genes
5. Complementary genes
6. Copy choice hypothesis

7. Sterns experiment
8. Tetrad analysis
9. Two point test cross

### Unit III

1. Chemical mutagens
2. CIB method for detection of mutations
3. Muller 5 method
4. Lac operon
5. Mitochondrial DNA
6. Translation
7. Structure of gene
8. Transposons

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