Class: B.Sc. III Year **Semester: V**

Subject: BOTANY **Paper No: XVII (CELL and MOLECULAR BIOLOGY)**

Periods per week: Th._ Pract.__

Weeks (Total): 15.

WEEKS	TOPICS TO BE COVERED
1	1. Cell: Structure of Prokaryotic cell (Bacterial cell) and Eukaryotic cell (plant cell) 2. Structure and functions of cell wall.
2	2. Structure and functions of cell wall. Cell organelles – Golgi complex
3	Cell organelles – Golgi complex Cell organelles – Endoplasmic Reticulum
4	Cell organelles – Lysosomes. 3. Nucleus: Ultra structure,
5	3. Nucleus: Ultra structure and Functions.
6	1. Cell division: a) Cell cycle -G1 phase, S phase, G2 phase and M phase b) Mitosis – definition, process and significance.
7	c) Meiosis-definition, process and significance.
8	2**.** Nucleic acids**:** a. DNA: Definition, structure, chemical composition (nitrogenous bases, purines, pyrimidines, nucleosides, nucleotides, phosphate and sugars) Watson and Crick's model, Z - DNA, B - DNA, functions of DNA.
9	b. Replications of DNA – conservative, semi conservative and dispersive.
10	c. RNA: Structure, types and functions
11	1) Chromosome: Definition, morphology-size, shape, number, Ultra structure.
12	Nucleosome model (Woodlock 1973), chemical composition, Functions of chromosome. Giant chromosomes - Polytene Chromosome.
13	Giant chromosomes: Lampbrush Chromosome. 2) Chromosomal aberrations: a) Structural-deletion, duplication.
14	Chromosomal aberrations: Inversion and translocation.
15	b) Numerical: – Euploidy and aneuploidy.

Dr. Ashfaque Khan

Class : B.Sc. III Semester V
Subject : BOTANY Paper No:
Periods per week : Th._____ Pr._____
Weeks (Total) : 15

WEEK	Topic to be covered
1	**Practicals:- -** Cell structure
2	**Practicals:-** Cell organelle, Mitochondria.
3	**Practicals:-** Cell organelle, Chloroplast.
4	**Practicals:-** Cell organelle, Golgi bodies, Endoplasmic reticulum etc.
5	**Practicals:-** Demonstration of preparation of cell slide of tredascantia
6	**Practicals:-** Preparation of cell slide of Tredascantia
7	**Practicals:-** Preparation of cell slide of Onion
8	**Practicals:-** Study of Cyclosis.
9	**Practicals:-** Study of Cyclosis.
10	**Practicals:-** Explaination of Idiogram.
11	**Practicals:-** Preparation of Idiogram
12	**Practicals:-** Preparation of idiogram.
13	**Practicals:-** Demonstration of Mitosis.
14	**Practicals:-** Preparation of slides for mitotic study.
15	**Practicals:-** Preparation of slides for mitotic study.

Class: B.Sc. III Year **Semester: V**
Subject: BOTANY **Paper No: XVI B (Plant Breeding and Seed Technology)**
Periods per week: Theory
Weeks (Total): 15.

WEEKS	TOPICS TO BE COVERED
1	Introduction, History, Aims and Objectives of Plant Breeding. Domestication,
2	Plant Introduction and acclimatization, Hybridization, History and types, Procedure.
3	Selection methods-mass selection and pure line selection.
4	Colonel selection-hybridization in self pollinated crops.
5	Procedure of Hybridization in self pollinated crop-pedigree method and bulk method.
6	Hybridization in cross pollinated crops- development of inbreds, single cross, three way cross, double cross, synthetic crosses.
7	Heterosis and Hybrid vigour. Role of Mutation in crop improvement.
8	Mutation breeding, Hybridization programme in Jowar.
9	Hybridization procedure in Jowar, Development of male sterile lines etc.
10	Hybridization in Cotton-Experimental designs and biometric techniques in plant. RBD, LSD, ANOVA.
11	Seed Technology-History Aims and Objectives. Morphology and anatomy of monocot and dicot seed
12	Stages of Seed Multiplication- Improved seeds, Nucleus, Breeder and foundation seed.
13	Certified seed, registered seed, Truthful seed. Seed certification process and agencies.
14	Stage wise seed multiplication in Sorghum and Cotton.
15	Seed processing and New techniques in seed technology

Dr. S.M. Quazi.