

**B.Sc. BOTANY**  
**II YEAR: Semester-IV**

**Paper IV: Cell Biology, Genetics and Plant Physiology**

DSC-1D

Credits-1

**Practical Syllabus**

**(60 hours)**

1. Demonstration of cytochemical methods: Fixation of plant material and nuclear staining for mitotic and meiotic studies.
2. Study of various stages of mitosis using cytological preparation of Onion root tips.
3. Study of ultra structure of cell organelles using photographs.  
Chloroplast, Mitochondria, Nucleus,
4. Study of Special types of Chromosomes (Polytene chromosome and Lampbrush chromosomes- Permanent slide)
5. Mendel's laws through seed ratios. Laboratory exercises in probability and chi-square analysis.
6. Chromosome mapping using test cross data.
7. Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4)
8. Determination of osmotic potential of vascular sap by Plasmolytic method using leaves of *Rheodiscolor / Tradescantia*.
9. Determination of rate of transpiration using Cobalt chloride method
10. Determination of stomatal frequency using leaf epidermal peelings / impressions
11. Determination of amylase activity using potato tubers by titration method
12. Separation of chloroplast pigments using paper chromatography technique
13. Estimation of protein by Biurette method
14. Mineral deficiency symptoms of Micro and Macro nutrients

**Practical Model Question Paper**

Time: 3 hrs

Max. marks: 50

1. Prepare a cytological slide of given material "A" and identify & describe any two stages with well labeled diagrams. (12M)
2. Genetics problem (10M)
3. Physiology Experiment (12M)
4. Identify and Comment on A & B (2x3 =6M)
  - A. Micronutrient / Macronutrients Deficiency symptoms
  - B. Cell organelles / Special type of Chromosomes
5. Record (5M)
6. Viva (5M)

*Handwritten signatures and marks in green and blue ink:*  
A. Kishore\*\*\*  
B. Kishore  
Blaw  
M. Anand  
Sushama  
Kishore