

PG CBCS
M.Sc. Semester- IV Examination, 2023
BOTANY
PAPER: BOT 402B
(CYTOGENETICS)

**Full Marks: 40****Time: 2 Hours**

The figures in the right-hand margin indicate full marks.
 Candidates are required to give their answers in their own words as far as practicable.

GROUP-A

1. Answer any **FOUR** of the following questions: 2×4=8
- Write down the formula of narrow sense and broad sense heritability.
 - Define intermediate filaments.
 - Mention the importance of cell cycle check points.
 - Distinguish between glyoxysome and peroxisome.
 - Mention the importance of B chromosome.
 - Write your concept on receptor molecules.

GROUP-B

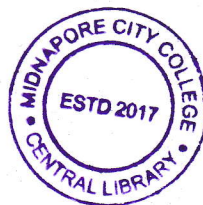
2. Answer any **FOUR** from the following questions: 4×4=16
- Write down the function of ion channels in transport mechanism of cell cycle.
 - State the significance of Polytene chromosomes.
 - Give a short note on factors affecting Hardy-Weinberg's law.
 - Define speciation. Briefly discuss the different types of speciation. 1+3
 - Discuss in brief the molecular mechanism of P⁵³ regulation on cell cycle.
 - Give a short note on nuclear DNA content variation across plant kingdom.

GROUP-C

3. Answer any **TWO** of the following questions: 2×8=16
- Explain about bottle neck effect.
 The human MN blood- type antigen are determined by two codominant alleles, L^M and L^N. The MN blood types and corresponding genotypes of 398 finns from Karjala are tabulated here.

(P.T.O)

Phenotype	Genotype	Number
MM	$L^M L^M$	182
MN	$L^M L^N$	172
NN	$L^N L^N$	44



Calculate the genotypic and allelic frequency at the MN locus for the kajaria population.

3+5

b) Give a short note on G protein coupled receptors and Steroid hormone receptors and write the importance in cell communication.

4+4

c) Define micro filaments mentioning its significance.

Give a short note on microtubules.

4+4

d) Discuss the molecular mechanism of cell cycle regulation

8
