Your Roll No.....

M. Sc (BOTANY)
Semester II- Examination - 2023
PAPER CODE: MBO-CC201
PAPER TITLE: GENETICS AND CYTOGENETICS

Time: 3 hours **Maximum Marks: 60**

Attempt all questions. All parts of a question must be attempted in continuation. Start answering each question on a new page. Cite examples and draw well label diagrams wherever necessary.

Q.1. Write short notes (ANY EIGHT) on the following: (8X1.5=12)

a. Polygenic inheritance
b. Complementary genes
c. Lyon hypothesis
d. Three factor cross
e. Auto Triploid
f. Transposons
g. Spilt genes
h. Alkylating agents
i. Frameshift mutation
j. Excision repair mechanism

Q.2 What are multiple alleles? How do they differ from isoalleles? Give a brief account of multiple allelism with example. **(12)**

OR

Discuss the sex determining mechanism of Drosophilla and Melandrium and compare it with that of human beings.

Q.3 In man, brown eyes (B) are dominant to blue (b) and dark hairs (R) dominant to red hairs(r).

A man with brown eyes and red hairs marries a woman of blue eyes and dark hairs. They have two children, one with brown eyes and red hairs and other with blue eyes and dark hairs. Give the genotypes of the parents and children. **(12)**

OR

What are inversions and how can these be produced? How will you distinguish a paracentric inversion with pericentric inversion through a study of meiosis (sketch suitable diagrams)

Q.4 What is the role of allopolyploid in evolution? Substantiate your answer giving suitable examples of crop plants. **(12)**

OR

Giving example, discuss the evidences suggesting the role of chloroplasts and mitochondria in cytoplasm inheritance.

OR

Q. 5 Discuss the conversion of proto-oncogenes into oncogenes by mutation. What kinds of alteration are involved in these mutations? Discuss using suitable examples. **(12)**

OR

Attempt **any two** of the following:

a. Insertional mutagenesis
b. Preparation of chromosome / linkage map
c. Tumour suppressor genes and their actions
