

**M.Sc. BOTANY**  
**Fourth Semester**  
**CYTOGENETICS & PLANT BREEDING**  
**(MSB – 402 A)**

**Duration: 3Hrs.**

**Full Marks: 70**

Part-A (Objective) =20  
Part-B (Descriptive) =50

**(PART-B: Descriptive)**

**Duration: 2 hrs. 40 mins.**

**Marks: 50**

**Answer any four from Question no. 2 to 8**  
**Question no. 1 is compulsory.**

1. Describe the antisense RNA technology and its application in agricultural sector. (10)
2. Define GMO. Describe the biosafety level in India for rDNA technological research. (2+8=10)
3. Describe in details the eukaryotic genome organization citing example of human genome. (10)
4. What is gene splicing? Diagrammatically represent mechanism of mRNA splicing in eukaryotes. (3+7=10)
5. What is attenuation? Differentiate the inducible and repressible type of operons with example. (2+8=10)
6. How does karyotyping differ from chromosome banding? Write the taxonomic significance of karyotyping with suitable example. (5+5=10)
7. What is DNA damage? Explain the molecular basis of mutation. (3+7=10)
8. "Cell division is also one of the highly regulated biological processes" – Justify the statement stating cell division regulation mechanism. (10)