2023
M.Sc.
Third Semester
CORE – 09
BOTANY
Course Code: MBOC 3.11
(Genetics, Cytogenetics & Plant Breeding)

Total Mark: 70 *Pass Mark: 28*
Time: 3 hours

Answer five *questions, taking* one *from each unit.*

UNIT–I

1. Write a note the following:
   (a) Inhibitory gene action 7
   (b) Reasons for Gregor Mendel's success 7

2. (a) Discuss on any two types of molecular mechanisms of mutation. 7
   (b) Define gene. Elucidate on the importance of recombination. 2+5=7

UNIT–II

3. (a) With the help of an example elaborate on chromosomal deletion. 7
   (b) What are interchange tester sets? How are they obtained? 4+3=7

4. (a) Comment on $2n-1$ and $2n+1$ signifying aneuploidy. 7
   (b) Write a note on interchange heterozygotes. 7

UNIT–III

5. (a) Describe breeding behaviour of autopolyploids with an example. 7
   (b) What is genome constitution? How is its analysis done? 3+4=7

6. (a) Discuss on the synthesis of octoploid triticales. 7
   (b) How is chromosome fragment transfer helpful in crop improvement? 7

UNIT–IV

7. (a) Discuss Hardy-Weinberg's law. 7
   (b) Write a note on heterosis and inbreeding depression. 7

8. Write notes on the following: 7×2=14
   (a) Bulk method of crop breeding
   (b) Test cross and back cross

UNIT–V

9. (a) Discuss on the estimation of heritability of traits. 7
   (b) Discuss on cultivar development. 7

10. (a) What is male sterility? Discuss its application in hybrid seed production. 7
    (b) Discuss crop breeding programs for stress and pest resistance. 7
