

M. Sc. BOTANY
III SEMESTER EXAMINATION DECEMBER 2025

Paper Name: **Plant Breeding**

Time: **2 ½ hours**

Paper Code: **MBODCE302**

Maximum Marks: **60**

Note: This paper has 03 sections A, B, and C.

Section A: Answer all the questions.

Section B: Attempt any 04 out of 06; Section C: Attempt any 02 out of 04

Abbreviations used:

CO-Course Outcomes

CLO 1: recognize aims and basic concepts of plant breeding (understand);

CLO 2: evaluate the various methods of crop improvement (evaluate);

CLO 3: produce new hybrids with desirable traits (create); and

CLO 4: access the role of molecular markers in crop improvement (evaluate).

BLT-Bloom's Taxonomy Levels

1- Remembering, 2-Understanding, 3-Applying, 4-Analyzing, 5-Evaluating, 6-Creating

SECTION A

Very Short Type Question (15 questions)

15 x 1 = 15 marks

Q. No.	Question	Marks	CO	BTL
1	Name any two conventional methods of crop improvement.	1	1	1
2	Define nullisomy.	1	2	2
3	What is domestication in plant breeding?	1	2	1
4	What is hybridization?	1	3	1
5	Mention any two types of aneuploidy.	1	3	2
6	Explain the molecular basis of chromosome pairing.	1	4	1
7.	What is heterosis?	1	2	1
8.	Define molecular markers.	1	2	2
9.	What is marker-assisted selection?	1	3	2
10.	What is the effect of chromosome doubling in polyploids?	1	4	1
11.	Name any two molecular markers techniques.	1	3	1
12.	What is monosomy?	1	2	2
13.	Briefly explain ribosomal RNA (rRNA).	1	1	1
14.	Write any two applications of DNA fingerprinting in plant breeding.	1	1	1
15.	Mention one merit and one demerit of hybridization.	1	2	1

SECTION B

Short Type Question. (Attempt any **FOUR**)

4 x 5 = 20 marks

Q. No.	Question	Marks	CO	BTL
1	Briefly explain interspecific and intraspecific hybridization.	5	3	2
2	Explain briefly molecular marker and its benefits.	5	2	1
3	What is the difference between sexual and asexual methods of crop improvement?	5	1	2
4	Describe the applications of haploid plants in crop improvement?	5	3	1
5	Differentiate between morphological and biochemical markers.	5	3	1
6	What are the major objectives of plant breeding in crop improvement? Cite some improved crops name generated through plant breeding.	5	4	1

SECTION C

Long type Question (Attempt any **TWO**)

2 x 12.5 = 25 marks

Q. No.	Question	Marks	CO	BTL
1	Write an essay on mutation breeding, including sources of mutations, methods, merits, and major achievements.	12.5	2	3
2	Explain numerical changes in chromosomes with reference to different types of aneuploidy and their relevance to breeding.	12.5	1	2
3	What are molecular maps? Discuss how genomics support marker-assisted selection in plant breeding.	12.5	3	3
4	How do trisomics differ from tetrasomics, and what is their relevance in genetic studies?	12.5	4	2

END OF QUESTION PAPER