Your Roll No ……

Department of Botany
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M.Sc. BOTANY
III SEMESTER EXAMINATION DECEMBER 2023

Paper Name: **Plant Tissue Culture and Genetic Engineering** Paper Code: **MBO-DCE301**
Time: **2 ½ hours** Maximum Marks: **60**
Note: This paper has 3 sections A, B, and C.
Section A: Answer all the questions. **Section B**: Attempt any 4 out of 5.
Section C: Attempt any 2 out of 3.

Abbreviations used:
CLO-Course Outcomes
CLO 1: relate basic concepts of plant tissue culture with their applications (understand);
CLO 2: improve their knowledge of various forms of plant tissue culture (understand);
CLO 3: analyze principles, tools and techniques of genetic engineering (analyze); and
CLO 4: summarize various application of genetic engineering (evaluate).

BTL-Bloom's Taxonomy Levels
1- Remembering, 2-Understanding, 3-Applying, 4-Analyzing, 5-Evaluating, 6-Creating

SECTION A

Very Short Type Question (12 questions) 12 x 1 = 12 marks

Q.No.	Questions	Marks	CLO	BTL
1	Who is regarded as the father of plant tissue culture?	1	1	1
2	Write two applications of cell suspension cultures.	1	2	1
3	Differentiate between dedifferentiation & redifferentiation.	1	1	2
4	What are desiccated synthetic seeds?	1	1	1
5	What are haploids?	1	2	1
6	How are virus free plants obtained through tissue culture?	1	1	2
7	Name three fusogens for the fusion of isolated protoplasts.	1	2	1
8	What are cybrids?	1	2	1
9	Name a method used for genetic transformation in plants.	1	3	1
10	What does PCR stand for?	1	3	1
11	Name two molecular markers.	1	3	1
12	What are ligases?	1	3	1

SECTION B

Short Type Question. (Attempt any four out of five) 4 x 6 = 24 marks

Q.No.	Question	Marks	CLO	BTL
1	Write down the procedure for the preparation & sterilization of plant tissue culturemedia.	4	1	1
2	What are androgenic haploids? Add a note on the application of haploids and double haploids in plant breeding.	4	2	2
3	Give a brief account of various methods used for the isolation of protoplasts.	4	2	3
4	Briefly describe the technique employed for the construction of recombinant DNA.	4	3	2
5	Write a brief essay on the status of transgenic plants in India.	4	4	2

SECTION C

Long type Question (Attempt any two out of three) 2 x 12 = 24 marks

Q.No.	Question	Marks	CLO	BTL
1	Give an elaborate account of the various factors affecting somatic embryogenesis.	12	1	1
2	Write down the various methods for making somatic hybrids in tissue culture. Add a note on the limitations of protoplast technology.	12	2	3
3	Write short notes on **any two**: 1. Genetic transformation in bacteria and fungi. 2. Transgenic plants vis a vis insect & herbicide resistance. 3. Bio fertilizers & bio pesticides**.**	12	3, 4	1

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