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**PG AGRICULTURE**  
**M.Sc. Semester-II Examination, 2022**  
**Genetics and Plant Breeding (GPB)**  
**(THEORY)**  
**PAPER: GPB 203**  
**(BIOTECHNOLOGY FOR CROP IMPROVEMENT)**

Full Marks: 50

Time: 2 Hours



**THEORY**

**1. Answer any five questions from the following:**

**2×5 = 10**

- a. What do you mean by Palindromic sequence?
- b. Define MCS and mention its importance in vector cloning.
- c. Briefly describe suspension culture.
- d. Mention the basic principles of gene gun.
- e. Distinguish between selectable and scorable marker.
- f. Why *Agrobacterium* is considered as a natural engineer?
- g. Define plasticity and totipotency.

**2. Answer any five questions from the following:**

**4×5 = 20**

- a. Give a short note on gene gun. 4
- b. What is protoplast culture? Clearly state the procedure and its utilization. 1+3
- c. Write down the mode of action of Bt. 4
- d. Briefly discuss on molecular firming. 4
- e. Schematically represent the cloning procedure of vector. 4
- f. How synthetic seeds are produced? State its importance in crop production. 3+1
- g. Mention the mechanism of blue white selection of pUC18. 4

**3. Answer any five questions from the following:**

**10×2 = 20**

- a. Describe the nutritional requirements of plant tissue culture. Mention different sterilization process used for plant tissue culture. 4+6
- b. What is meant by micropropagation? Describe somaclonal variation and mention its importance. 5+5
- c. Define transgenesis. How gene transformation can be made in different ways? 2+8
- d. Depict the structure of Ti plasmid. Mention the *vir* regulated T-DNA transfer procedure of *Agrobacterium*. 5+5

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