

PG
M.Sc. Semester-I Examination, 2021
GENETICS AND PLANT BREEDING
PAPER: GPB 103 (Theory + Practical)
(PRINCIPLES OF PLANT BREEDING)

Full Marks: 65

Time: 4 Hours

THEORY

Answer any FOUR questions from the following:

4X10 = 40

1. What do you mean by Plant Breeding? Discuss the various objectives of plant breeding?
 Comment on the multidisciplinary nature of plant breeding? 2+5+3
2. Briefly discuss the concept of centres of origin. In what way is this idea helpful in plant breeding? Enlist the Vavilovian centres of origin with one important example of each. 2+5+3
3. Compare mass selection and pureline selection. Describe the procedure of backcross method with flow chart. 5+5
4. Write short notes: 2×5
 - a. Plant introduction
 - b. Multiline method
 - c. Heterosis
 - d. Synthetic variety
 - e. Composite variety
5. Write short notes: 2×5
 - a. Apomixis
 - b. TGMS
 - c. Male sterility
 - d. Mutation breeding
 - e. The Hardy Weinberg law
6. Explain the mechanisms of self-incompatibility and their biochemical basis. Differentiate gametophytic and sporophytic system of self-incompatibility. How can CGMS be utilized in plant breeding? 3+3+4
7. Briefly discuss the various types of recurrent selection? Explain simple recurrent selection. Compare the different recurrent selection schemes? 2+4+4
8. What do you mean by heterosis and In-breeding depression? Describe the Various Types of heterosis? What is genetic basis of heterosis? 3+3+4

(P.T.O.)

(2)

PRACTICAL**Answer any ONE question from the following:****1X15=15**

1. What is the different procedure for hybridization in plants? 10
2. An experiment was conducted in RBD to study the comparative performance of fodder sorghum under rainfed condition the rearrange data given in table. Analysis the data & interpret your conclusion. 15

Grain matter yield of sorghum

Variety	R1	R2	R3	R4
African tall	22.9	25.9	39.9	33.9
Co 11	29	30.4	35.3	29.6
FS 1	28.8	24.4	32.1	28.6
K 7	47	40.9	42.8	32.1
Co 24	28.9	20.4	21.1	31.8

OR

3. What is the different formula for calculation of genetic variance? 15
4. Explain about pedigree method for crop plant selection? 10
