

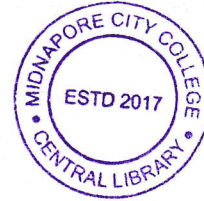
**M.Sc. Semester-I Examination, 2022**  
**(AGRICULTURE) IN GENETICS AND PLANT BREEDING**  
 PAPER: GPB 502  
**(PRINCIPLES OF PLANT BREEDING)**

Full Marks: 50

Time: 2 Hours

**GROUP-A****1. Answer any FIVE questions from the following:****2 X 5 = 10**

- a) What is Fairchild mule?
- b) Why it is needed to raise hybrid seed each and every year?
- c) What is adventive embryonic?
- d) What is LD 50? How will you determine the LD50 dose?
- e) What is Hardy Weinberg law?
- f) Why multiline variety is produced?
- g) Define cleistogamy and chasmogamy.
- h) Explain base collection and active collection of seed.

**GROUP-B****2. Answer any FOUR questions from the following:****5 X 4 = 20**

- a) Differentiate between heterosis and inbreeding depression. Explain the dominance hypothesis of heterosis. 2+3
- b) Give a short account on genetic improvement of clonal crop.
- c) What is mutation? Write down different types of mutagen with example. 1+4
- d) Briefly explain the origin of hexaploid wheat. How triticale was developed?
- e) Distinguish between pedigree and bulk method of breeding. What is single seed descent method? 3+2
- f) Briefly explain the pure-line theory as outline by Johanson in French bean.
- g) Use of distant hybridization.
- h) Briefly discuss about the process of male gamete formation from pollen mother cell. Calculate the number of meiosis for production of 100 seeds. 4+1

(P.T.O.)

(2)

**GROUP-C**

3. Answer any **TWO** questions from the following: **10 X 2 = 20**
- a) What is self- incompatibility? Briefly explain the homomorphic system of self-incompatibility. **2+8**
- b) Define recurrent parent. Describe the procedure of backcross method for the transfer of a recessive gene. Discuss the merits and demerits of backcross methods of breeding. **1+5+4**
- c) Distinguish between horizontal and vertical resistance? Who proposed gene for gene resistance? Explain the hypothesis with suitable example. **5+1+4**
- d) Discuss in detail the techniques of developing single cross hybrid in maize using cytoplasmic genetic male sterility system. What are the important breeding criteria for the genetic improvement of maize in India? **8+2**



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