PG

MCC/23/M.Sc./Sem. 12

M.Sc. Semester-I Examination, 2023

(AGRICULTURE) IN GENETICS AND PLANT BREEDING

PAPER: GPB 502

(PRINCIPLES OF PLANT BREEDING)

Full Marks: 50

Time: 2 Hours

The figures in the right-hand margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

GROUP-A

1. Answer any FIVE questions:

 $2 \times 5 = 10$

- a) Differentiate pureline from isogenic lines?
- b) Distinguish between GCA and SCA.
- c) What is meant by inbreeding depression?
- d) Define RIL and NIL.
- e) What is apomixis?
- f) What is genetic erosion?
- g) Define protandry and protogyny.
- h) Write about primary and secondary gene pool.

GROUP-B

2. Answer any FOUR questions:

5 X 4 = 20

2 + 3

- a) Explain the dominance and over dominance hypothesis of heterosis.
- b) What is mutagen? Write down different types of mutagen with example. 1+4
- c) Write briefly about germplasm conservation.
- d) State different breeding methods of self-pollinated crops. Distinguish between synthetic and composite variety. 2+3
- e) Write a short note on pure-line theory.
- f) What is self-incompatibility? How sporophytic self-incompatibility differs from gametophytic self-incompatibility?

 1+4
- g) Briefly discuss about the process of gametogenesis in pollen mother cell.

GROUP-C

3. Answer any TWO questions:

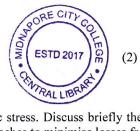
 $10 \times 2 = 20$

a) Define plant breeding. Write down the different objectives of plant breeding.

2+8

- b) What is male sterility? How different types of male sterility are utilized in commercial agriculture? 1+3+6
- c) Briefly describe the bulk method of breeding and its applications. Discuss its merits and demerits.

(P.T.O.)



d) Define abiotic stress. Discuss briefly the importance of abiotic stress. Mention the various approaches to minimise losses from abiotic stress. 1+4+5
