2025

M.Sc. in Agriculture
1st Semester Examination

GENETICS AND PLANT BREEDING

Paper : GPB-502

(Principles of Plant Breeding)

Full Marks : 70 Time : Two Hours

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

Group - A

Answer any ***five*** questions : 2×5=10

1. What is transgressive segregation?
2. State the Hardy-Weinberg law.
3. Differentiate between synthetic and composite varieties.
4. What is meant by inbreeding depression?
5. Define apomixis.
6. What is genetic erosion?
7. Define protandry and protogyny.

P.T.O.

8. What is base collection and active collection of germplasm?

Group - B

Answer any ***four*** questions : 5×4=20

9. Define heterosis. Explain the dominance hypothesis of heterosis. 1+4

10. What is mutagen? Write down different types of mutagens with examples. 1+4

11. Briefly explain the origin of hexaploid wheat. How the triticale was developed? 3+2

12. Distinguish between pedigree method and bulk method of breeding.

13. Write a short note on pure-line theory as proposed by Johannsen.

14. Briefly explain megasporogenesis and microgametogenesis. Mention the genetic basis of self-and cross-pollinated plant. 3+2

Group - C

Answer any ***two*** questions : 10×2=20

15. What is male sterility? Briefly discuss about the CGMS system of male sterility. Write a short note on Barnase-barstar system. 1+4+5

16. Define recurrent parent. Describe the procedure of backcross method for the transfer of a dominant gene. Mention the merits and demerits of backcross method. 1+7+2

17. Write a short note on boom-and-bust cycle. Explain the gene-for-gene hypothesis with a suitable example. 4+6

18. Define hybridization. Briefly describe the different methods of emasculation. Elucidate the different sources of genetic variation. 1+4+5

Internal Assessment : 20 marks
