

2022

BOTANY — HONOURS

Paper : SEC-B-3

(Plant Breeding)

Full Marks : 80

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

1. Answer the following questions : 2×10
- (a) Mention two applications of back cross method.
 - (b) What is meant by hybrid seed?
 - (c) What is QTL?
 - (d) Define plant introduction.
 - (e) What is the function of NBPGR?
 - (f) Name two vectors used for plant gene transfer.
 - (g) Define genetic erosion.
 - (h) Mention one merit and one demerit of pure line selection.
 - (i) State two objectives of plant breeding.
 - (j) What is somaclonal variation?
2. Answer **any four** of the following :
- (a) Write a short note on the centres of origin and domestication of crop plants. 5
 - (b) Write a short note on cytoplasmic genetic male sterility. 5
 - (c) State the procedure of mass selection and its application. 5
 - (d) What is transgenic plant? Give two examples of transgenic plants developed by gene transfer technique. Which was the first successful transgenic plant available commercially? 2+2+1
 - (e) How does aneuploidy help in crop improvement? 5
 - (f) Write a short note on clonal selection. 5
3. Answer **any four** of the following :
- (a) Discuss the selection methods for self-pollinated and cross-pollinated plants. Mention two merits of each of the two methods. 6+4

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- (b) Discuss the role of mutations in crop improvement. State applications and limitations of mutation breeding. 5+5
- (c) Define emasculation. State the objectives of hybridization. Discuss distant hybridization mentioning its barriers and techniques applied for production of distant hybrids. 2+3+(3+2)
- (d) What is inbreeding? What are the effects of inbreeding? Define hybrid vigour. Explain its applications. 2+3+2+3
- (e) What is germplasm? Comment on the importance of germplasm maintenance. Define *in situ* germplasm conservation. Mention its demerits. 2+5+1+2
- (f) Describe briefly about various types of molecular markers. Mention one advantage and one limitation of molecular markers. 8+2
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