2021

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) Define apomixis.

(b) Give two merits of mass selection in breeding programme.

(c) What is meant by acclimatization?

(d) What is progeny testing?

(e) Define distant hybridization. Give an example.

(f) What do you mean by domestication? Give an example.

(g) Write one application of recurrent selection.

(h) Name a chemical mutagen and mention its mode of action.

(i) Mention two gene transfer techniques.

(j) How does colchicine help in plant breeding?

2. Answer ***any four*** of the following : 5×4

(a) State the contrivances and consequences of self pollination.

(b) Write a short note on tissue-culture application in plant breeding.

(c) Briefly enumerate the different ways of germplasm maintenance.

(d) Write a short note on inbreeding depression.

(e) Write a short note on back cross method and its application.

(f) Write a note on pedigree method of breeding.

3. Answer ***any four*** of the following :

(a) What are the objectives of plant breeding? Discuss the achievements and undesirable consequences of plant breeding. 3+4+3

(b) Define molecular marker and genetic marker. Which one of the above two mentioned is more favourable and why? Write a note on the unique features of molecular marker. (1+1)+3+5

(c) What is pure-line? Compare pure-line selection with mass selection. Mention one advantage and one disadvantage of pure-line selection. 1+6+3

(d) What is meant by male-sterility? What are the types of male sterility? How is male sterility utilised in plant breeding? 1+4+5

(e) What is heterosis? Explain the genetic basis of heterosis. 2+8

(f) Discuss the role of polyploidy and biotechnology in crop improvement. 5+5

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