

BankimSardar College

B.Sc. Honours SemesterIV Examination

2020

Botany Honours

Paper: Plant breeding (SEC-B)

Class Attendance: 10 Marks

Time: 2 Hours

Full Marks: 90

Answer of each group should be in separate answer sheet

Group: A

(All questions are compulsory)

1. Answer all questions.

[1 X 10 = 10]

- a.** Who coined the term 'heterosis'
 - i. Huxley
 - ii. Robard
 - iii. Tansley
 - iv. Shull
- b.** Emasculation is a part of
 - i. Clonal selection
 - ii. Pureline selection
 - iii. Mass selection
 - iv. Hybridization
- c.** Pure line breed refers to
 - i. Homozygosity and self-assortment
 - ii. Heterozygosity only
 - iii. Heterozygosity and linkage
 - iv. Homozygosity
- d.** Hybridisation involve
 - i. Male sterility
 - ii. Female sterility
 - iii. Removal of stigma
 - iv. Removal of stamens
- e.** Bagging is done to avoid
 - i. cross-pollination
 - ii. achieve desired pollination

- iii. avoid self-pollination
- iv. prevent contamination with unwanted pollen
- f. The offspring from a cross between two individuals differing in at least one set of characters is called
 - i. Polyploid
 - ii. Variant
 - iii. Mutant
 - iv. Hybrid
- g. Plants can be disease resistant by
 - i. Hormone treatment
 - ii. Heat treatment
 - iii. Colchicine treatment
 - iv. Breeding with their wild relatives
- h. In bread wheat chromosome number is
 - i. 21
 - ii. 14
 - iii. 24
 - iv. 42
- i. Which one is an improved variety of wheat
 - i. A 77
 - ii. Chandramukhi
 - iii. Sonalika
 - iv. Raphanobrassica
- j. Plant breeding is
 - i. An art
 - ii. A science
 - iii. A chemistry
 - iv. Both an art and a science

Group B

(Attempt all questions)

[10 X 3 = 30]

2. Define backcross. What is the difference between backcross and test cross? Discuss its advantages and disadvantages. Briefly discuss the achievements of backcross. [2+2+4+2]

3. Discuss the advantages and disadvantages of pureline selection. What is the difference between mass selection and pureline selection? [6+4]

4. Discuss the Vavilov centre of origin for the crop plants.

[10]

Group C

5. Attempt all questions

[10 X 2 = 20]

- a. Define pureline selection.
- b. What is DNA marker?
- c. What is male sterility?
- d. What is crop breeding?
- e. Define polyploidy?
- f. What is distant hybridization?
- g. What is heterosis?
- h. What is inbreeding depression?
- i. Define acclimatization.
- j. What is germplasm?

6. Attempt any 6 questions

[6 X 5 = 30]

- a. Discuss the role of distant hybridization in crop improvements.
- b. Discuss the methods of hybridization.
- c. Discuss the uses of DNA markers in plant breeding.
- d. Discuss the role of biotechnology in crop improvements.
- e. Briefly discuss the merit and demerits of mass selection.
- f. Discuss the uses of male sterility plant breeding.
- g. Discuss the important achievement of plant breeding and undesirable consequence of plant breeding.
- h. Schematically represent the general procedure for pureline selection.