

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Fourth Semester)

Branch – BOTANY

GENETICS AND GENETIC IMPROVEMENT OF CROPS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 x 1 = 10)

- An exception to Mendel's law is
 - Dominance
 - Independent assortment
 - Purity of gametes
 - Linkage
- The cross which proves that sex has no influence on inheritance is
 - back cross
 - reciprocal cross
 - test cross
 - monohybrid cross
- Crossing over was discovered by
 - Morgan
 - Punnett
 - Bateson
 - Stern
- When closely placed genes on the same chromosome are inherited together, the phenomenon is known as
 - gene interaction
 - crossing over
 - linkage
 - qualitative inheritance
- The mutagenic chemicals which resembles nucleotide bases are called
 - deaminating agents
 - alkylating agents
 - base analogs
 - cross linking agents
- Which of the following chromosomal alterations would you expect to have the most drastic consequences?
 - inversion
 - translocation
 - duplication
 - deletion
- A group of plants obtained from a single vegetatively reproducing plant is called
 - clone
 - hybrid
 - inbred
 - mutant
- Adaptation of plants to survive in a changed climate is known as
 - introduction
 - acclimatization
 - selection
 - hardening
- CRRI is located in
 - Coimbatore
 - Delhi
 - Calcutta
 - Cuttack
- In India mutation breeding of Wheat was initiated by
 - Parnel
 - M.S. Swaminathan
 - Ramiah
 - Albert Howard

Cont...

SECTION - B (35 Marks)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5 x 7 = 35)

11. a) Explain the incomplete dominance with suitable example.

(OR)

b) Describe Mendel's monohybrid cross with suitable illustration.

12. a) Summarize the different types of aneuploidy.

(OR)

b) Explain the process of linkage. Add a note on the types of linkage.

13. a) Give a brief account on gene mutations.

(OR)

b) Comment on mutagens.

14. a) Enumerate the objectives of plant breeding.

(OR)

b) Briefly discuss the general aspects of expression of hybrid vigour.

15. a) What is mutation breeding? How do plant breeders use it in Wheat improvement?

(OR)

b) Describe the plant breeding methods you would employ in effecting improvement of Sugarcane.

SECTION - C (30 Marks)

Answer any **THREE** Questions

ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16. Elucidate the interaction of genes with reference to dominant epistasis.

17. Illustrate the mechanism of crossing over.

18. Highlight the types of chromosomal aberrations.

19. Discuss the steps involved in the methods of mass selection.

20. Examine the various methods to breed improved varieties of paddy.

Z-Z-Z

END