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B. Sc Course (CBCS) Ordinance Sem-VI
EXAMINATION APRIL 2023
BOTANY - CYTOGENETICS & PLANT BREEDING

[Time:2 Hours]

[Max. Marks:80]

- Instructions:**
- i) All questions are **compulsory** however **internal choice** is available.
 - ii) Answer sub-questions in Question 1 and Question 2, briefly.
 - iii) Figures to the **right** indicate **maximum** marks to the questions.
 - iv) **Draw** labelled diagrams **wherever** necessary.

Q1 Answer **any four** of the following:

16

- a) What is self-incompatibility? Explain its mode of inheritance.
- b) Write the merits and demerits of mass selection.
- c) Define cytoplasmic inheritance. What are its characteristics?
- d) State the objectives of plant breeding.
- e) Explain the mechanism of sex determination in heterogametic females.
- f) What are the characteristics of quantitative inheritance?

Q2 Write short notes on **any four** of the following.

16

- i) Clonal selection.
- ii) Significance of meiosis.
- iii) Types of inversions.
- iv) Three point test cross.
- v) Frame shift mutations.
- vi) Inbreeding depression.

Q3 A) What is epistasis? Explain with an example.

6

OR

A) With an appropriate example, explain duplicate recessive gene interaction.

6

B) Discuss the inheritance of shell coiling in *Limnea peregra*.

6

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Q4 A) Explain the phenomenon of linkage with suitable examples. 6

OR

A) Discuss the pattern of inheritance of X-linked genes and holandric genes. 6

B) With reference to chemical mutagens, explain the terms: 6

i) Base analogues ii) Deamination.

Q5 A) Briefly discuss the various steps involved in Hybridization 6

OR

A) Briefly discuss the method of Hybridization in cross pollinated crops 6

B) Describe the inheritance of kernel colour in wheat 6

Q6 A) Describe meiosis in translocation heterozygote. What are the different types of gametes expected to be formed 6

OR

A) Discuss the morphological and features of autopolyploid. 6

B) Discuss the concept of centres of origin of crop plants. Mention its importance. 6