

TM242387F

Reg. No : .....

Name : .....

MASTER'S DEGREE (C.S.S) EXAMINATION, MARCH 2024  
2023 ADMISSIONS REGULAR  
SEMESTER II - CORE COURSE BOTANY  
BO2C06TM20 - Cell Biology, Genetics and Plant Breeding

Time : 3 Hours

Maximum Weight : 30

**Part A**

**I. Answer any Eight questions. Each question carries 1 weight**

**(8x1=8)**

1. Write short notes on histones and non-histone proteins.
2. Explain the centromere structure in chromosome.
3. Give full form of GPCR.
4. Write a short note on the Pachytene stage.
5. Define the following terms a) Interference b) Centimorgan c) Barr Body d) Linkage group e) Law of Independent assortment.
6. Write a very brief account on the inheritance pattern of Huntington's Chorea.
7. What are the exceptions to Hardy Weinberg principle?
8. Describe the major centres of origin of cultivated plants.
9. Give an account of domestication.
10. Write a short note on abiotic stresses.



**Part B**

**II. Answer any Six questions. Each question carries 2 weight**

**(6x2=12)**

11. Clarify the IP3- DAG pathway.
12. Give details on the role of Calcium ions ( $\text{Ca}^{2+}$ ) in cell signalling.
13. Explain the microtubule-dependent motor proteins.
14. Comment on telomerase.
15. Describe X chromosome inactivation in mammals.
16. Explain genetic mapping in human pedigree.
17. Write a detailed account on the causes of cancer.
18. Differentiate between allopatric speciation and sympatric speciation.

**Part C**

**III. Answer any Two questions. Each question carries 5 weight**

**(2x5=10)**

19. Explain cytoskeletal filaments in eukaryotic cells.
20. Elucidate the cell cycle control system with an appropriate diagram.
21. In reality populations do not follow Hardy Weinberg equilibrium. Describe this statement in detail by listing out the factors that affect the gene frequency.
22. What are the modern trends in plant breeding? Specify any 2 methods.