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2025

M.Sc. in Agriculture
1st Semester Examination

GENETICS AND PLANT BREEDING

Paper : GPB-505

(Principles of Cytogenetics)

Full Marks : 70 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Group - A

Answer any ***five*** questions : 2×5=10

1. What is Univalent shift?
2. Explain bridge species.
3. What are the differences between triploid and trisomics?
4. Define Double haploid.
5. Differentiate euchromatin from heterochromatin.
6. What is dysploidy?
7. What is lampbrush chromosome?
8. Define NOR and mention its importance.

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Group - B

Answer any ***four*** questions : 5×4=20

9. What is Karyotype? Briefly explain Karyogram and Ideogram.

10. Briefly discuss on Polytene Gaint chromosomes.

11. Write a short note on cell cycle regulation.

12. How fertilization barrier could be overcome through in vitro techniques?

13. What is nullisomy? Discuss its origin.

14. Define allopolyploidy. Explain the segmental allopolyploidy.

Group - C

Answer any ***two*** questions : 10×2=20

15. What are the differences between haploid and monoploid? Discuss the different types of haploids. What are the characteristics of autopolyploid species? Describe the evolution of wheat. 2+4+2+2

16. What is chromosome banding? Describe the different types of chromosome banding techniques. What is *in situ* hybridization? Discuss the application of *in situ* hybridization. 1+5+2+2

17. What is structural chromosomal aberration? Discuss briefly different types of structural chromosomal

aberrations. What is the evolutionary significance of structural chromosomal aberration? 1+7+2

18. What is wide hybridization? Discuss the brassica triangle mentioning the genomic architecture of all the species. What are Raphanobrassica? 2+6+2

Internal Assessment : 20 marks

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