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Printed Pages : 3

(20623)

Roll No. _____

B.Sc. (Biotech.)- II Year

NS-3467

B.Sc. (Biotechnology) Examination,

June-2023

MOLECULAR GENETICS AND

CYTOGENETICS

(B-204)

B.Sc. (Bio-tech.)

Time : Three Hours

[Maximum Marks : 50

Note : Attempt any **five** questions. All questions carry equal marks.

1. What are molecular markers ? Discuss the characteristics of RFLP and SSR marker and their use in biotechnological research. 10
2. Define 'Plant Breeding'. Discuss the various plant breeding methods for the improvement of maize wheat. 10

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3. What are different numerical changes in chromosomes ? Explain in detail about "Aneuploidy". 10
4. Differentiate between the following : $4 \times 2\frac{1}{2} = 10$
 - (i) Chromosome walking and chromosome jumping
 - (ii) Paracentric inversion and Pericentric inversion
 - (iii) Autopolyploidy and Allo-polyploidy
 - (iv) Repetitive and unique sequences
5. What is chromosome mapping ? How can we prepare a chromosome map using three-point test-crosses ? 10
6. What are mono-ploids and haploids ? Describe different methods of production of haploids. Also discuss the role of haploids in plant breeding. 10
7. What is a translocation heterozygote ? Using suitable sketches discuss the meiosis in a translocation heterozygote. 10

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8. Write short note on the following : 4×2½ = 10

- (a) Monosomy and nullisomy
- (b) Trisomy and tetrasomy
- (c) Breeding behaviour of a translocation heterozygote
- (d) Inversion as cross-over suppressors

9. Write in detail about classical and modern concept of gene. 10

10. Write detailed note on : 4+3+3

- (a) Triticale
- (b) Raphanobrassica
- (c) Brassica triangle