

19/594**M.Sc. Third Semester Examination, 2019****BOTANY****Second Paper****(Genetics and Cytogenetics)****Time : Three Hours****Maximum Marks : 100**

Note : Answer **five** questions in **all**. Short answer type **Question No.1** carrying **40** marks is **compulsory**. Answer **one** question carrying **15** marks from each unit.

Note : The answers to short questions should not exceed 200 words and the answers to long questions should not exceed 500 words.

P.T.O.**19/594**1. Briefly explain the following: $4 \times 10 = 40$

- (i) Epistasis
- (ii) Quantitative and Qualitative traits.
- (iii) Incomplete dominance
- (iv) Hardy-Weinberg law
- (v) Migration
- (vi) Linkage map
- (vii) Pseudoalleles
- (viii) Three point test cross
- (ix) Mutagens
- (x) Transposons

Unit - I

2. Discuss giving examples the upto plasmic inheritance in higher plants. 15

OR

Write comprehensive notes on the following $3 \times 5 = 15$

- (i) Lethal and additive gene interaction.
- (ii) Chloroplast genomes
- (iii) Multiple factors hypothesis

Unit - II

3. Discuss the cytological basis of crossing over and explain the genetic consequences of inversion. 15

OR

Describe briefly: 3×5=15

- (i) Gene and genotype frequencies
- (ii) Deficiency
- (iii) Robertsonian translocations

Unit - III

4. Discuss in detail the types and molecular of recombination. 15

OR

Briefly explain the following: 3×5=15

- (i) Aneuploidy
- (ii) Transmission of trisomics
- (iii) Gene mapping

Unit - IV

5. Describe the spontaneous and induced mutation with particular reference to molecular basis of mutation. 15

OR

Explain the following: 3×5=15.

- (i) Significance of R/A ratio in higher plants
- (ii) Enzymes involved in DNA repair
- (iii) Mismatch repair system

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