

(iii) Testicular feminization

(iv) Petite mutations in *Saccharomyces cerevisiae*

4. (a) Explain with the help of diagrams the process of cytoplasmic segregation and basis of variegation in leaf colour of *Mirabilis jalapa*. (7)

(b) What is linkage? How does linkage differ from independent assortment of genes? Also explain the fact behind recombination frequency never exceeds beyond 50%. Distinguish between complete and incomplete linkage. (8)

5. (a) Enlist the categories of transposons by transposition mechanism and explain the role of transposons in mutations. (6)

(b) Explain DNA fingerprinting as a molecular signature for unique identity establishment, conservation and finding adulterants in drugs. (9)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4638

J

Unique Paper Code : 2164002005

Name of the Paper : Inheritance in Biology

Name of the Course : **Botany (Common Prog. Group Generic Elective)**

Semester : VI

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **four** questions in all including question no. 1 which is compulsory.
3. Attempt all parts of the questions together.

4638

2

1. (a) Define the following (**Any five**) (5×1=5)

- (i) Polygenic Inheritance
- (ii) Minisatellites
- (iii) Bar bodies
- (iv) Expressivity
- (v) Pedigree
- (vi) Lethal genes
- (vii) Wild-type phenotype

(b) Expand the following (**Any five**) (5×1=5)

- (i) 5-BU
- (ii) SRY
- (iii) PKU
- (iv) F₂
- (v) VNTR
- (vi) CF
- (vii) RAPD

(c) Write major contribution (**any five**) (5×1=5)

- (i) R.C. Punnet
- (ii) T.H. Morgan

4638

3

(iii) William Bateson

(iv) Alec Jeffreys

(v) Alfred Sturtevant

(vi) Hugo de Vries, Carl Correns, and Erich von Tschermak.

(vii) Barbara McClintock

2. Differentiate between **any five** : (5×3=15)

- (i) Dominance vs Epistasis
- (ii) Spontaneous vs Induced mutations
- (iii) Cut and paste vs replicative transposons
- (iv) Penetrance vs Expressivity
- (v) Chromosomal vs Molecular diagnosis of human diseases
- (vi) Codominance vs incomplete dominance

3. Write short notes on **any three** of the following : (5×3=15)

- (i) Multiple allelism
- (ii) Thalassemia

P.T.O.