

(iii) Petite mutants in *Saccharomyces cerevisiae*

(iv) DNA fingerprinting

4. (a) 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)

(b) Describe the cytoplasmic segregation and basis of variegation in leaf colour of *Mirabilis jalapa*? (7)

5. (a) What are physical mutagens and their types? Briefly explain the molecular mechanism of mutations caused by non-ionizing radiations. (7)

(b) What are the karyotypes of (i) a female with Down syndrome, (ii) a male with trisomy 13, (iii) a female with Turner syndrome, and (iv) a male with Klinefelter syndrome? (8)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 3003

I

Unique Paper Code : 2164002005

Name of the Paper : Inheritance in Biology

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

Semester : III

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.

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

(i) Incomplete dominance

(ii) Petite mutations

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(iii) Polygenic inheritance

(iv) Lethality

(v) Pedigree

(vi) Chiasmata

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

(i) F_1

(ii) 5-BU

(iii) RFLP

(iv) SRY

(v) PKU

(vi) CF

(vii) EMS

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

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

(ii) T. H. Morgan

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(iii) William Bateson

(iv) Henry Turner

(v) Barbara McClintock

(vi) Sutton and Boveri

(vii) R.C. Punnett

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

(i) Dominance vs Epistasis

(ii) X-linked Recessive vs Dominant disorders

(iii) Cut and paste vs Replicative transposons

(iv) Penetrance vs Expressivity

(v) Base substitutions vs Frameshift mutations

(vi) Chromosomal vs Molecular diagnosis of diseases

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

(i) Testicular feminization

(ii) Dominant Epistasis

P.T.O.