Total *number of printed pages–3*

3 (Sem–3/CBCS) BOT HC3

2024

BOTANY

(Honours Core)

Paper : BOT–HC–3036

(Genetics)

Full Marks : 60

Time : Three hours

**The figures in the margin indicate
full marks for the questions.**

1. Answer the following questions : 1×7=7

   (a) Who is known as father of Genetics ?

   (b) Write down the monohybrid ratio of Mendelian inheritance.

   (c) The crossing of F1 to either of the parents is known as _____.

   (d) In which stage of cell division does the crossing over occur ?

(e) Write the mathematical expression of double monosomy.

(f) Who discovered Linkage?

(g) What is the substitution of a purine base with a pyrimidine base known as?

2. Answer the following questions briefly : 2×4=8

(a) What do you mean by test cross?

(b) What is incomplete dominance?

(c) What is cistron?

(d) Define speciation.

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

(a) Linkage

(b) Inversion

(c) Transposons

(d) Molecular concept of a Gene

(e) Genetic drift

4. Answer **any three** of the following : 10×3=30

(a) With suitable cross explain the Law of Independent Assortment.

(b) What do you mean by Extra-chromosomal inheritance? Explain the plastid inheritance in Four O'Clock plant. 2+8=10

(c) A, B, C, D are four genes located in a chromosome. The frequency of crossover of each of the genes is given below. Construct a chromosome map with the given crossover frequency.
Gene Frequency of crossover—
A–C 30%
B–C 45%
B–D 40%
A–D 25%

(d) Write an explanatory note on structural changes in chromosome.

(e) What do you mean by Mutation? Discuss different kinds of mutagens. 2+8=10

(f) With suitable example discuss Hardy-Weinberg Law.

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