



**Avinashilingam Institute for Home Science and Higher Education for Women**  
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)  
Re-accredited with A<sup>++</sup> Grade by NAAC. Recognized by UGC Under Section 12B  
Coimbatore - 641 043, Tamil Nadu, India

**Continuous Internal Assessment – I August, 2025**  
**III Semester**

**Class: II UG**  
**Major: Zoology**

**Time: 2 Hours**  
**Marks: 60**

**23BZOC06 Genetics**

**Course Outcomes:**

1. Apply the principles of Mendelian inheritance
2. Understand the cause and effect of alterations in chromosome number and structure
3. Relate the conventional and molecular methods for gene manipulation in other biological systems
4. Discuss and analyse the epigenetic modifications, imprinting and their role in diseases
5. Get new avenues of joining research in related areas such as genetic engineering

**Part – A**

**6x1=6**

**Choose the correct answer**

- |   |  |        |
|---|--|--------|
| 1 | The geometrical device that helps to find out all the possible combinations of male and female gametes is known as | CO1 K1 |
|   | a) Bateson Square b) Mendel Square c) Punnett Square d) Mendel's Cube  |        |
| 2 | A cross between F <sub>1</sub> hybrid with any of the parent is called   | CO1 K3 |
|   | a) Test cross b) out cross c) back cross d) criss cross  |        |
| 3 | The total number of linkage groups in an organism is equal to the  | CO2 K4 |
|   | a) Allosome b) autosome c) chromosome d) chromosome pairs  |        |
| 4 | Crossing over occurs during  | CO2 K5 |
|   | a) Meiosis I b) Meiosis II c) Mitosis d) Amitosis  |        |
| 5 | In which stage the bivalents become tetrads?   | CO3 K3 |
|   | a) Leptotene b) Zygotene c) Pachytene d) Diplotene   |        |
| 6 | If the sex is determined at the time fertilization, it is known as   | CO2 K4 |
|   | a) Progamic b) syngamic c) epigamic d) polygamic   |        |

**Part- B**

**3x6=18**

**Answer all the questions**

**Each answer should not exceed 400 words or two pages**

- |   |  |        |
|---|--|--------|
| 7 | a) Define lethal genes with suitable example                 | CO1K1  |
|   | or   |        |
| 7 | b) Discriminate the terms genotype and phenotype             | CO1K5  |
| 8 | a) Interpret sex chromosomal mechanism with examples         | CO1 K3 |
|   | or   |        |
| 8 | b) Paraphrase the different types of gynandromorphs          | CO3 K2 |
| 9 | a) Describe the inheritance of kappa particles in paramecium | CO1 K2 |
|   | or   |        |
| 9 | b) Intervene on gene transfer through transduction           | CO1 K6 |

**Part – C**

**3x12=36**

**Answer all the questions**

**Each answer should not exceed 600 words or four pages**

- |    |   |        |
|----|---|--------|
| 10 | a) Define multiple alleles with suitable example  | CO1K1  |
|    | or  |        |
| 10 | b) Determine polygenic inheritance with suitable example                                | CO1K3  |
| 11 | a) Compose the types and mechanism of crossing over                                     | CO2 K6 |
|    | or  |        |
| 11 | b) Validate the genic balance mechanism   | CO3 K6 |
| 12 | a) Appraise the types and movement of transposons and its role in antibiotic resistance | CO3 K5 |
|    | or  |        |
| 12 | b) Debate the operon concept in bacteria  | CO3 K5 |