

November 2025
M.Sc.
First Semester
CORE – 01
ZOOLOGY
Course Code: MZOC 1.11
(Genetics & Cytogenetics)

Total Mark: 70

Pass Mark: 28

Time: 3 hours

Answer five questions, taking one from each unit.

UNIT-I

1. The eukaryotic genome is often described as a mosaic of unique and repetitive sequences. Elaborate on this statement by describing the fundamental characteristics and its functional roles. Add a note on the organisation of chromosomes. 10+4=14
2. Explain transmission of organelle genetic traits in *Chlamydomonas* and *Saccharomyces*. 7+7=14

UNIT-II

3. Taking two-point test cross as an example, calculate the map distance in a chromosome. Add a note on interference and coincidence. 8+6=14
4. Write a note on each of the following: 7×2=14
 - (a) Hybridoma
 - (b) Concept and applications of somatic cell

UNIT-III

5. Explain in detail the various mutagens that damages DNA molecules. 14
6. Write a note on each of the following: 7×2=14
 - (a) Retrotransposons
 - (b) Genetic aspects of sickle-cell anaemia and thalassemia

UNIT-IV

7. Give an account of the various autosomal and sex chromosomal anomalies in human. 14
8. Write a note on each of the following: 7×2=14
- (a) Conjugation as method of gene transfer
 - (b) Prenatal diagnosis

UNIT-V

9. Write a detailed note on tumour inducing retroviruses and viral oncogenes. 7+7=14
10. Write a note on each of the following: 7×2=14
- (a) Wilms' tumour
 - (b) P53 as tumour suppressor gene
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