

**2024/FYUG/ODD/SEM/
ZOODSC-201T/067**

FYUG Odd Semester Exam., 2024

**ZOOLOGY
(3rd Semester)**

Course No. : ZOODSC-201

(Principles of Genetics)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

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

UNIT—I

1. Answer any *two* from the following : $2 \times 2 = 4$
 - (a) Why did Mendel choose pea plants for his works?
 - (b) What is testcross and backcross?
 - (c) What are pseudo alleles?
2. Explain Mendel's law of segregation and independent assortment with suitable examples. Differentiate between monohybrid and dihybrid crosses. Add a note on incomplete dominance. $6+2+2=10$

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(Turn Over)

(2)

OR

3. What are multiple allele, pseudo allele and lethal allele? Explain the inheritance of ABO type of blood grouping in human. $6+4=10$

UNIT—II

4. Answer any two from the following : $2 \times 2 = 4$
- (a) Define recombination. Name one model of recombination.
 - (b) Mention the significance of linkage.
 - (c) What are linkage maps?

5. What do you understand by crossing-over? At what stage of cell division does crossing-over occur? Discuss the mechanism of crossing-over with diagram. Add a note on the significance of crossing-over. $1+1+6+2=10$

OR

6. Answer/Write short notes on the following : $5 \times 2 = 10$
- (a) Discuss in detail the mechanism of linkage. Name the different types of linkage that occur in nature.
 - (b) Interference and its types

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(Continued)

(3)

UNIT—III

7. Answer any two from the following : $2 \times 2 = 4$
- (a) What are sex chromosomes and autosomes?
 - (b) What is sex-influenced inheritance? Give example.
 - (c) Define mitochondrial mutation.

8. What is sex determination? Describe various types of sex chromosomal mechanism of sex determination with illustration. Add a note on environmentally controlled sex determining mechanism. $1+6+3=10$

OR

9. What is meant by cytoplasmic inheritance? Explain the phenomenon of maternal inheritance with an appropriate example. What are Kappa particles? Who investigated inheritance of Kappa particles in Paramecium? $2+5+2+1=10$

UNIT—IV

10. Answer any two from the following : $2 \times 2 = 4$
- (a) What are polygenes? Give example.
 - (b) What are transformation and transduction?
 - (c) Mention the characteristics of multiple genes.

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(Turn Over)

(4)

11. Define polygenic inheritance. Explain the phenomenon of polygenic inheritance with suitable examples. Add a note on phenotypic plasticity. $2+6+2=10$

OR

12. Write short notes on the following : $5 \times 2 = 10$
(a) Complementation test in bacteriophage
(b) Conjugation and its significance

UNIT—V

13. Answer any *two* from the following : $2 \times 2 = 4$
(a) What is polyploidy?
(b) What are giant chromosomes? Give example.
(c) Mention the importance of pedigree analysis.
14. Define chromosomal aberrations. Describe different types of chromosomal aberrations with suitable illustrations. $2+8=10$

OR

15. Answer/Write short notes on the following : $5 \times 2 = 10$
(a) Structure and function of polytene chromosomes
(b) Write a detailed note on causes, origin and features of any one of the genetic disorders in human.

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