

**2025 / FYUG / ODD / SEM /
ZOODSC-201T / 335**

FYUG Odd Semester Exam., 2025

ZOOLOGY

(3rd Semester)

Course No. : ZOODSC-201T

(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

Answer any two from the following : $2 \times 2 = 4$

- (a) What is codominance? Cite one example of codominance.
- (b) Define pseudoallele and lethal allele.
- (c) What is epistasis? Give example.

(Turn Over)

2. Answer any one from the following :

- (a) What do you understand by monohybrid cross and dihybrid cross? Explain the law of independent assortment by Mendel with suitable example. Define the term 'pleiotropism'. $2+6+2=10$
- (b) What are multiple alleles? Who put forwarded the concept of multiple allele? Explain the phenomenon of multiple allelism with special reference to ABO blood group in man. $2+1+7=10$

UNIT—II

Answer any two from the following :

- (a) Mention the difference between complete linkage and incomplete linkage. $2 \times 2 = 4$
- (b) What is interference in gene mapping?
- (c) Define recombination. Name two models of recombination.

Answer any one from the following :

- (a) What is crossing over? Explain the mechanism of crossing over with proper illustration. Add a note on the significance of crossing over. $1+7+2=10$

(Continued)

(3)

(b) Discuss the phenomenon of linkage citing suitable examples. Mention the significance of linkage in nature. Add a note on linkage map. $6+2+2=10$

UNIT—III

Answer any two from the following : $2 \times 2 = 4$

- (a) What are sex chromosomes and autosomes?
- (b) What is sex-influenced inheritance? Give examples.
- (c) What is SRY? Mention its function.

6. Answer any one from the following : 10

- (a) What do you understand by homogametic and heterogametic sexes? Write in detail about the different types of chromosomal mechanism of sex determination. Add a brief note on the hormonal mechanism of sex determination. $2+6+2=10$
- (b) Write short notes on any two from the following : $5 \times 2 = 10$

- (i) Mitochondrial mutation with example

(Turn Over)

(4)

- (ii) Maternal inheritance with example
(iii) Sex-linked inheritance with example

UNIT—IV

7. Answer any two from the following :

- (a) What is meant by polygenic inheritance? $2 \times 2 = 4$
(b) What is conjugation? Mention its significance.
(c) What is bacteriophage? Give example.

8. Answer any one from the following :

- (a) What are polygenes? Differentiate between Mendelian inheritance and polygenic inheritance. Explain the phenomenon of polygenic inheritance with suitable example. 10
(b) What do you understand by transformation? Who discovered the process of transduction in bacteria? Give a detailed account of transduction in bacteria. $1 + 2 + 7 = 10$

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26J-1010/739

(5)

UNIT—V

Answer any two from the following : $2 \times 2 = 4$
(a) What are pericentric and paracentric inversions?
(b) Define aneuploidy. Give example.

(c) What do you understand by genetic disorders? Give two examples of the same.

Answer any one from the following : 10

(a) What are chromosomal aberrations? Describe chromosomal structural aberrations with suitable diagram. What are polyploids? Give example of polyploids. $2 + 6 + 2 = 10$

(b) Write short notes on the following : $5 \times 2 = 10$

(i) Structure and function of Lampbrush chromosome

(ii) Pedigree analysis and its significance

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