

**2025/FYUG/EVEN/SEM/
ZOODSM-252/053**

FYUG Even Semester Exam., 2025

**ZOOLOGY
(4th Semester)**

Course No. : ZOODSM-252

(Genetics and Molecular Biology)

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 of the following questions :

2×2=4

- (a) State Mendel's law of segregation.
- (b) Differentiate between incomplete dominance and co-dominance.
- (c) What is pleiotropy? Cite an example of the phenomenon.

J25/1276

(Turn Over)

(2)

2. (a) What is meant by multiple allelism? What are the characteristic features of multiple allelic genes? Discuss multiple allelic inheritance of ABO blood grouping system in man. Add a brief note on lethal alleles. $2+2+4+2=10$

Or

- (b) What is epistasis? How does epistasis differ from the phenomenon of dominance? Discuss supplementary gene interactions with a suitable illustration. $2+2+6=10$

UNIT—II

3. Answer any *two* of the following questions : $2 \times 2 = 4$

- (a) What is linkage? Elucidate.
(b) Define crossing-over.
(c) Who coined the term 'mutation'? Define point mutation.

4. (a) What is meant by genetic recombination? Discuss the mechanism of crossing-over and the theories related to the phenomenon. $2+4+4=10$

(3)

Or

- (b) What is meant by chromosomal aberrations? Discuss different types of gene mutations. What is tautomerization? $1+7+2=10$

UNIT—III

5. Answer any *two* of the following questions : $2 \times 2 = 4$

- (a) How many types of sex-chromosomes are there in human? What is Turner's syndrome?
(b) What is meant by criss-cross pattern of inheritance?
(c) What is meant by extra-chromosomal inheritance? Elucidate briefly.

6. (a) Discuss sex-chromosomal mechanism of sex determination in animals with suitable examples. Add a note on genic balance mechanism of sex determination. $6+4=10$

(4)

Or

- (b) What are holandric genes? Discuss inheritance of X-linked genes in humans with suitable illustrations. Differentiate between sex-influenced and sex-limited genes with examples.

1+6+3=10

UNIT—IV

7. Answer any *two* of the following questions :

2×2=4

- (a) What is nucleic acids and who first isolated it?
(b) Differentiate between B-DNA and Z-DNA.
(c) What is meant by non-genetic RNA and what are its types?

8. (a) What is nucleotide? Discuss double helical structural model of DNA with proper diagram.

2+8=10

Or

- (b) Discuss, in detail, the chemical composition of DNA and RNA. Differentiate between nucleoside and nucleotide.

8+2=10

(5)

UNIT—V

9. Answer any *two* of the following questions :

2×2=4

- (a) What is meant by semi-conservative mode of DNA replication?
(b) What is transcription? Elucidate.
(c) What is Wobble hypothesis?

10. (a) What are the types of enzymes involved in the process of DNA replication? Discuss the mechanism of DNA replication in prokaryotes.

4+6=10

Or

- (b) What are the general features of genetic code? Discuss briefly the mechanism of translation process in prokaryotes.

4+6=10

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