

D 130280

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Name.....

Reg. No.....

**FIFTH SEMESTER CBCSS-UG DEGREE EXAMINATION
NOVEMBER 2025**

(2019 Syllabus)

Zoology

ZOL 5B 08T—BIOCHEMISTRY AND MOLECULAR BIOLOGY

Time : Two Hours and a Half

Maximum : 80 Marks

Section A

*All questions can be answered
Each question carries 2 marks.
(Ceiling 25 marks)*

- 1) What are Van der Waals interactions, and how do they differ from hydrogen bonds ?
- 2) Why is deoxyribose important in DNA ?
- 3) Define glycogenesis.
- 4) What is a zymogen ?
- 5) What is competitive inhibition ?
- 6) What are prostaglandins ?
- 7) Name any four proteins involved in the DNA replication in eukaryotes.
- 8) Mention the uses of paper chromatography.
- 9) Explain oxidative phosphorylation.
- 10) How do transposons contribute to genome size expansion ?
- 11) What is the significance of pseudogenes in diseases such as cancer?
- 12) What are molecular chaperones ?
- 13) What is a promoter ? Why is promoter significant in gene-function ?
- 14) What are redox reactions ?
- 15) What are luxury genes, and how do they differ from housekeeping genes ?

(Ceiling 25 marks)

Turn over

Section B

*Paragraph/ Problem type.
All questions can be answered.
Each question carries 5 marks.
(Ceiling 35 marks)*

- 16) What is wobble hypothesis, and how does it explain the degeneracy of the genetic code ?
- 17) Write an account on the biological importance of carbohydrates.
- 18) What is maternal inheritance, and how does it relate to the mitochondrial genome ?
- 19) Explain Meselson and Stahl experiment.
- 20) What is CRISPR-Cas9, and how does it function as a genome editing tool ?
- 21) Why are regulatory RNAs important in gene expression and cellular processes ?
- 22) How did the Human Genome Project contribute to our understanding of human genetics and diseases ?
- 23) Describe the steps involved in the assembly and release of new bacteriophage particles in the lytic cycle.

(Ceiling 35 marks)

Section C

*Essay type
Answer any **two** of the following questions.
Each question carries 10 marks.*

- 24) Explain β -oxidation of fatty acids.
- 25) Briefly describe the process of regulation of gene expression in *trp* Operon.
- 26) Illustrate the structure and function of tRNA molecules.
- 27) Explain the concept of post-translational modification (PTM) and its importance in protein function.

(2 × 10 = 20 marks)