



K26P 1239

Reg. No. :

Name :

Second Semester M.Sc. Degree (CBCSS – OBE – Reg./Supple./Imp.)
Examination, April 2026
(2023 Admissions Onwards)
**ZOOLOGY/ZOOLOGY (STRUCTURE, PHYSIOLOGY, DEVELOPMENT AND
CLASSIFICATION OF ANIMALS)**
MSZGY02C09/MSZNG02C09 : Molecular Biology and Bioinformatics

Time : 3 Hours

Max. Marks : 60

PART – A

Answer **any five** of the following. **Each** question carries **3** marks. (5×3=15)

1. Define C-value paradox.
2. State the role of sigma factor in transcription.
3. What is alternative splicing?
4. Define BLAST and mention its purpose.
5. Explain the concept of processivity in DNA polymerase.
6. What is RNA editing?

PART – B

Answer **any three** of the following. **Each** question carries **6** marks. (3×6=18)

7. Compare chromatin organization in prokaryotes and eukaryotes, and judge its regulatory significance.
8. Evaluate DNA repair mechanisms and justify which pathway is most critical for genome stability.

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9. Examine degeneracy of genetic code and assess how wobble base pairing increases translational efficiency.
10. Compare global and local alignment methods and judge their suitability in evolutionary studies.
11. Assess replication fork coordination using the trombone model.

PART – C

Answer **any three** of the following. **Each** question carries **9** marks. (3×9=27)

12. Analyse replication of eukaryotic chromosomes including origin recognition complex, helicase activation and telomere replication.
13. Critically analyse transcription regulation in eukaryotes including mediator complex and promoter escape.
14. Apply knowledge of translation to compare initiation mechanisms in prokaryotes and eukaryotes.
15. Evaluate CRISPR-Cas9 genome editing mechanism and analyze its ethical and biomedical implications.
16. Assess applications of next-generation sequencing platforms in metagenomics and functional genomics.