D 140640 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2026

(CBCSS)

Botany

BOT2C04—CELL BIOLOGY, MOLECULAR BIOLOGY AND BIOPHYSICS

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

Section A (Short Answer Type Questions)

Answer any **four** *questions.*

1. What is the difference between constitutive and facultative heterochromatin ?
2. Briefly describe the tumour suppressor gene.
3. What is satellite DNA ?
4. Write short note on the enzymes responsible for telomere replication.
5. Give the examples of physical mutagens and chemical mutagens.
6. Define pH.
7. State Beer-Lambert's law.

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

Answer any **four** *questions.*

8. Briefly explain aging at the cellular and extracellular levels.
9. Discuss the genetic control and consequences of meiosis.
10. Discuss DNA repair mechanisms with example.
11. Explain the methodology of PAGE for macromolecule separation.

Turn over

12. Describe extrinsic and intrinsic interactions in cellular differentiation.

13. Discuss transcription and post-transcriptional modifications in eukaryotes.

14. Discuss the working of ELISA.

(4 × 3 = 12 weightage)

Section C (Long Essay Type Questions)

Answer any **two** *questions.*

15. Discuss chromatin organization, nucleosomes, scaffold, and chromosome banding.

16. Describe the process of DNA replication in prokaryotes and eukaryotes, mentioning primosomes and replisomes.

17. Explain the specific events in G1, S, G2, and M phases of the cell cycle.

18. Describe the theory and methodology of centrifugation and its applications.

(2 × 5 = 10 weightage)