QP Code: P25C033

Reg. No : .....
Name : .....

ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

III SEMESTER (CBCSS - PG) DEGREE EXAMINATIONS, OCTOBER 2025
M. Sc. Biotechnology
GBT3E01 : STEM CELL BIOLOGY - PART A
2024 Admission Onwards

Time:3 Hours **Maximum Weightage:30**

Part A

*Short answer type questions: Answer **any four**. Weightage **2** for each.*
(4x2 = 8 Weightage)

1. List any two uses of stem cells in regenerative medicine.
2. Compare embryonic and adult stem cells.
3. Why is nuclear transfer important in cloning?
4. Explain how Yamanaka factors contribute to reprogramming.
5. Apply cryopreservation in stem cell banking.
6. Explain how liver stem cells function in regeneration.
7. Evaluate the risks of using embryonic stem cells in clinical therapy.

Part B

*Short essay-type questions: Answer **any four** questions. Weightage **3** for each question.*
(4x3 = 12 Weightage)

8. List two sources of adult stem cells.
9. List two transcription factors regulating pluripotency.
10. Explain why neural stem cells are important for neurotherapy.
11. Compare nuclear transfer with fertilization in embryonic development.
12. Explain the challenges of isolating ICM cells.
13. Apply neural stem cells in developing cell-based therapies for various diseases.
14. Evaluate uncontrolled proliferation risks in stem cell therapies.

Turn Over

Part C

*Essay-type questions: Answer **any two**. Weightage **5** for each.*
(2x5 = 10 Weightage)

15. Explain how the classification of stem cells helps in choosing the right type for therapy.
16. Explain the importance of the blastocyst for ESC development and isolation.
17. Explain how scientists make disease-specific iPSCs.
18. How are embryonic stem cells used in the creation of organoids.

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