QP Code: PV25B004

Reg. No : .....

Name : .....

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

II SEMESTER (CBCSS-VPG) DEGREE EXAMINATION, MARCH 2025

M Voc Applied Biotechnology

GEC2AB07 : ANIMAL BIOTECHNOLOGY AND CELL CULTURE TECHNIQUES

2024 Admission Onwards

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

Part A

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

1. How are cultured cells characterized *in vitro*? Explain the common methods used to assess cell morphology, viability, and identity. [BTL2]
2. Describe the method of Fibroblast Immortalization. [BTL2]
3. Explain the key indicators that determine when cells in culture need to be subcultured. [BTL2]
4. Define cell culture-based vaccines and explain how they are produced. [BTL1]
5. Discuss the role of regulatory frameworks in ensuring the safety of GM foods and examine the ethical considerations in the use of GMOs in agriculture, including the concerns of biodiversity and consumer choice. [BTL3]
6. Critically assess the global regulatory frameworks in the use, containment, and release of genetically modified organisms (GMOs), with particular focus on 'crippling organisms' and the potential ecological risks. [BTL4]
7. Assess the importance of cryopreservation in preserving cell lines and biological samples for long-term use in research and therapy. [BTL5]

Part B

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

8. Define the essential components of a cell culture laboratory. [BTL1]
9. Illustrate the process of isolating mouse embryo cells using a diagram showing the key steps. [BTL2]
10. Choose the most important supplements and explain their role in enhancing cell growth and function in serum-supplemented media. [BTL3]

Turn Over

11. Utilize transgenic animals as models for studying genetic disorders. [BTL3]

12. Construct a detailed experimental protocol for performing an MTT assay to measure cell proliferation. [BTL3]

13. Assume you are disaggregating a primary tissue culture; describe how warm trypsin treatment would differ from cold treatment in terms of enzymatic activity and outcome. [BTL4]

14. A biotech company has developed a new drug based on research from the Human Genome Project that could save lives but is extremely expensive, making it inaccessible to many. How would you address the ethical dilemma of equity and access in distributing this drug? [BTL5]

Part C

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

15. Define biomaterials and discuss their importance in tissue engineering applications. [BTL1]

16. Classify different types of stem cells based on their origin and potency. [BTL2]

17. Identify the factors contributing to the success or failure of human IVF cycles. [BTL3]

18. Critically evaluate the use of animals in scientific research and testing. [BTL5]

****