25900018 **Reg.No : .....**

Name : .....

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS) REGULAR EXAMINATION MARCH 2025

SECOND SEMESTER

Multi-Disciplinary Courses (MDC) - MG2MDCBTG100 - TOOLS AND TECHNIQUES IN BIOTECHNOLOGY

(2024 ADMISSION ONWARDS)

Duration: 1 Hours **Maximum Marks: 35**

Remember(K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I) and Appreciation(Ap)

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A

One Word Answer

Answer any **10** questions

Each question carries **1** marks

1. What is the process of making RNA from DNA? [K] / [CO1]
2. What are the two types of DNA ends created by restriction enzymes? [K] / [CO2]
3. What is the starting point of DNA replication? [U] / [CO1]
4. Which gel electrophoresis method is better for resolving small DNA fragments? [U] / [CO1]
5. What are the steps involved in expressing a protein in a host cell by gene cloning? [U] / [CO2]
6. Define bioinformatics. [K] / [CO3]
7. What is recombinant DNA technology? [U] / [CO2]
8. Recall the functions of qPCR. [K] / [CO1, CO4]
9. What is a cloning vector? [K] / [CO2]
10. What is GenBank? [U] / [CO3]

11. Why does DNA migrate when exposed to an electric field? [U] / [CO1]

12. list out the steps of protein isolation. [K] / [CO4]

[1x10 = 10]

Part B

Short Essay

Answer any **3** questions

Each question carries **5** marks

13. What is translation, and why is it important for protein synthesis? [U] / [CO1]

14. Comment on the role of ribosomal RNA (rRNA) in protein synthesis. [U] / [CO1]

15. Discuss mutagenesis. [K] / [CO2]

16. Compare and contrast DNA and RNA. [U] / [CO1]

17. Summarize the chromatographic techniques used in protein purification. [U] / [CO4]

[5x3 = 15]

Part C

Essay

Answer any **1** questions

Each question carries **10** marks

18. Recall and summarize the process of PCR with reference to the components and steps in PCR. [K] / [CO1, CO4]

19. Discuss the steps involved in the expression of a gene to a protein. [U] / [CO2]

[10x1 = 10]