

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS)

FIFTH SEMESTER EXAMINATION

Discipline Specific Elective Course (DSE)

MG5DSEBOTA03: APPLICATIONS OF rDNA TECHNOLOGY

(2024 ADMISSION ONWARDS)

Time: 2 Hrs

Maximum Marks: 70

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

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

Part A

One or two Sentences

Answer any ten questions Each question carries 2 marks

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|---|-----|-----|
| 1. What is the use of restriction enzymes in rDNA technology? | [K] | [1] |
| 2. What is PCR? | [U] | [1] |
| 3. Recall any two advantages of vector mediated gene transfer. | [K] | [2] |
| 4. How would you summarize the types direct gene transfer? | [K] | [2] |
| 5. Define metabolic engineering. | [U] | [3] |
| 6. What are edible vaccines? | [K] | [3] |
| 7. Name any four products from genetically modified plants. | [K] | [3] |
| 8. What are the advantages of transgenic plants? | [U] | [3] |
| 9. How is the addition of <i>nif</i> genes helpful in agricultural crops? | [U] | [4] |
| 10. Enlist any two GM crops. | [K] | [4] |
| 11. Comment on the importance of molecular farming. | [U] | [4] |
| 12. What are biofertilizers? | [U] | [4] |

(2 × 10 = 20)

PART - B

Short answer

Answer any eight questions. Each question carries 5 marks

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| 13. What are the applications of PCR? | [U] | [1] |
| 14. Describe the steps involved isolation of DNA from nucleus. | [K] | [1] |
| 15. Why is Agrobacterium commonly used as a vector for gene transfer? | [U] | [2] |
| 16. How are crop plants improved for tolerance against abiotic stress? | [A] | [3] |
| 17. What are the applications of antimicrobial fabrics? | [A] | [4] |
| 18. Explain the significance and process of designing edible vaccines. | [A] | [3] |
| 19. Comment on the benefits of transgenic plants as bioreactors. | [A] | [3] |
| 20. How was golden rice developed? | [U] | [4] |
| 21. What are the major ethical issues related to transgenic crops and GEOs? | [A] | [5] |
| 22. What are the advantages of modifying biofertilizers with <i>nif</i> genes? | [A] | [4] |

(5 × 8 = 40)

PART – C

Essay

Answer any one question. Each question carries 10 marks

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| 23. Write an essay on the tools used in rDNA technology. | [K] | [1] |
| 24. What is direct gene transfer? Explain in detail the various types of direct gene transfer. | [U] | [2] |

(10 × 1 = 10)