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| University of Kerala | | |
| Discipline: Biotechnology |  | Time: 1 Hour 30 Minutes (90 Mins.) |
| Course Code: UK1DSCBIT103 |  | Total Marks: 42 |
| Course Title: Fundamentals of Biotechnology |  |  |
| Type of Course: DSC |  |  |
| Semester: 1 |  |  |
| Academic Level: 100-199 |  |  |
| Total Credit: 4, Theory: 3 Credit |  |  |

Part A. 6 Marks.Time: 6 Minutes Objective Type. 1 Mark Each. Answer AllQuestions

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(Cognitive Level: Remember/Understand)

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| **Qn.**  **No.** | **Question** | **Cognitive**  **Level** | **Course**  **Outcome(CO)** |
| 1. | Name a microorganism used as biopesticide | Remember | CO2 |
| 2. | List any two examples of bacterial vectors. | Remember | CO1 |
| 3. | Identify a biofortified GM crop | Understand | CO2 |
| 4. | What is the principle of DNA fingerprinting technique? | Understand | CO4 |
| 5. | Describe the role of *Lactobacillus* species in yogurt fermentation | Understand | CO2 |
| 6. | What are the advantages of PHB? | Understand | CO3 |

Part B. 8 Marks. Time: 24 Minutes

Short Answer. 2 Marks Each. Answer All Questions (Cognitive Level: Understand/Apply)

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| --- | --- | --- | --- |
| **Qn.**  **No.** | **Question** | **Cognitive**  **Level** | **Course**  **Outcome(CO)** |
| 7. | Explain the necessary steps in biological evidence analysis | Understand | CO4 |
| 8. | Describe the Indian government’s initiatives to promote biotechnology | Understand | CO1 |
| 9. | Discuss two applications of AI in biotechnology | Apply | CO4 |
| 10. | Describe the role of microbial rennet in cheese production | Apply | CO2 |

Part C. 28 Marks. Time: 60 Minutes

Long Answer. 7 marks each. Answer all 4 Questions, choosing among options within each question.

(Cognitive Level: Apply/Analyse/Evaluate/Create)

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| **Qn.**  **No.** | **Question** | **Cognitive**  **Level** | **Course**  **Outcome(CO)** |
| 11. | A. Illustrate how modern biotechnology has transformed human healthcare  Or  B. Demonstrate how you would use a plasmid with a selectable marker to differentiate between transformed and non-transformed bacteria. | Apply | CO1 |
| 12. | A. Analyse the applications of biotechnology in crop improvement and agriculture  Or  B. Examine the role of microbial biotechnology in food preservation | Analyze | CO2 |
| 13. | A. Evaluate the significance of the phrase "Biotechnology for environmental remediation”  Or  B. Compare and evaluate the various types of bioenergy | Evaluate | CO3 |
| 14. | A. A crime scene yields a sample with very low amount of DNA. Applying the principles of PCR, design a protocol to prepare a good quantity of sample  Or  B. Design a gene therapy protocol targeting any one genetic disorder. | Create | CO4 |



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| **Cognitive**  **Level** | **Marks** | **Percentage** |
| Remember | 2 | 4.8 |
| Understand | 8 | 19.0 |
| Apply | 11 | 26.2 |
| Analyse | 7 | 16.7 |
| Evaluate | 7 | 16.7 |
| Create | 7 | 16.7 |
| **TOTAL** | **42** | **100** |

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| **Course**  **Outcomes** | **Marks** | **Percentage** |
| CO1 | 10 | 23 |
| CO2 | 12 | 29 |
| CO3 | 8 | 19 |
| CO4 | 12 | 29 |
| **TOTAL** | **42** | **100** |