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**Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET UNIVERSITY)**

M.Sc. (Second Semester - Regular) Examinations, July - 2025

**24MBIPE12007 – Microbial Technology
(Biotechnology)**

Time: 3 hrs

Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A**(2 x 5 = 10 Marks)**Q.1. Answer **ALL** questions

| | CO # | Blooms Level |
|---|------|-----------------|
| a. Name two bioactive compounds used in medical field. | CO1 | K2 |
| b. State about soil remediation. | CO2 | K2 |
| c. Differentiate between aerobic biodegradation and anaerobic biodegradation. | CO2 | K3 |
| d. Write two host name for the discovery of novel enzymes. | CO4 | K2 |
| e. What is primary screening? Give one example. | CO1 | K2 |

PART – B**(10 x 5 = 50 Marks)**Answer **ALL** the questions

| | Marks | CO # | Blooms Level |
|--|-------|------|-----------------|
| 2. a. Write notes on biological sensors in environmental monitoring system. | 5 | CO2 | K2 |
| b. Discuss about the downstream approaches used in industrial production process. | 5 | CO3 | K3 |
| (OR) | | | |
| c. Discuss about the mechanism of advanced genome and epigenome editing tools for manipulation of useful microbes and their applications. | 5 | CO1 | K3 |
| d. Discuss about the role of microbes and microbial processes in food and healthcare industries. | 5 | CO4 | K3 |
| 3.a. Explain about global metagenomics initiative projects and it's outcome. | 5 | CO5 | K3 |
| b. Write notes on international and national guidelines used regarding use of genetically modified organisms in environment, food and pharmaceuticals. | 5 | CO2 | K2 |
| (OR) | | | |
| c. Discuss in about bioremediation mechanism for the removal of toxic waste. | 5 | CO2 | K3 |
| d. Write about mechanism of biodegradation process with it's types. | 5 | CO2 | K2 |
| 4.a. Write notes on microbial genomics for discovery of novel enzymes. | 5 | CO5 | K2 |
| b. Discuss about the attributes required by industrial microbes to be used as efficient cloning and expression system for biological production. | 5 | CO3 | K3 |
| (OR) | | | |
| c. Write notes on microbial cell factories. | 5 | CO3 | K2 |
| d. Briefly explain about bacterial and viral vector in drug delivery system. | 5 | CO4 | K2 |
| 5.a. Discuss about the non-recombinant ways of introducing desirable properties in GRAS microbes to be used in food. | 5 | CO4 | K3 |
| b. Discuss the role of recombination process and r-DNA technology in strain improvement. | 5 | CO1 | K3 |

(OR)

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|---|---|-----|----|
| c. Write notes on environmental application of microbes with different examples. | 5 | CO2 | K2 |
| d. Discuss in detail about screening process of industrial strain with different examples. | 5 | CO1 | K3 |
| 6.a. Write notes on metagenomic library construction. | 5 | CO5 | K2 |
| b. Explain about the suitable screening methods used for the identification of suitable host during metagenomic library construction. | 5 | CO5 | K3 |

(OR)

- | | | | |
|--|---|-----|----|
| c. Discuss about the role of microbes in the production of recombinant proteins and pharmaceuticals. | 5 | CO3 | K3 |
| d. Write notes on global biogeochemical cycles. | 5 | CO1 | K2 |

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