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**GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR
(GIET UNIVERSITY)**



Ph.D. (Second Semester-Summer) Examinations, May - 2025

**23SPPEBT2011 - Microbial Technology
(Biotechnology)**

Time: 3 hrs

Maximum: 70 Marks

The figures in the right hand margin indicate marks.

Answer ANY FIVE Questions.

(14 x 5 = 70 Marks) Marks

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| 1.a. | What is continuous culture? Write an essay on its types and importance. | 7 |
| b. | Discuss about the role of microorganisms in human welfare. | 7 |
| 2.a. | Write about the isolation and screening process of microbes important for industry with its application. | 7 |
| b. | Define antibiotic. Write on classification and uses of antibiotics. | 7 |
| 3.a. | Write on production of alcohol in industry. Add notes on improvement of strain. | 7 |
| b. | Write on industrial production of beta lactam antibiotics. | 7 |
| 4.a. | What are primary metabolites? Write on primary metabolites and their role in cell. | 7 |
| b. | Describe probiotics and their application in food industry? | 7 |
| 5.a. | What are biopesticides? Describe production of a bio-pesticide in large scale industry. | 7 |
| b. | Give in detail the process of bioleaching. | 7 |
| 6.a. | Explain about the role of biosensor in environmental monitoring with its importance. | 7 |
| b. | Discuss about the role of microbes and microbial processes in food and healthcare industries? | 7 |
| 7.a. | Draw a structure of a fermentor and write on its instrumentation. | 7 |
| b. | Describe in detail on downstream processing and product recovery. | 7 |
| 8.a. | What is metabolic engineering? Describe one metabolic engineering technique for improvement of production of secondary metabolites. | 7 |
| b. | What is continuous culture? Write an essay on its types and importance. | 7 |

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