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



Ph.D. (Second Semester- Winter) Examinations, April – 2026
23WPPEBTS201 - Microbial Processing Techniques and Immunology
(Biotechnology)

Time: 3 hrs

Maximum: 70 Marks

Answer ANY FIVE Questions.**(14 x 5 = 70 Marks) Marks**

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| 1.a. Write about the Biological Activity Analysis of Purity of bioactive compounds. | 8 |
| b. Write about product economics. | 6 |
| 2. Write about microbial culture techniques and explain in brief. | 14 |
| 3.a. Give a note in detail about Gene manipulation. | 7 |
| b. Narrate about the Screening techniques for Microbial Products. | 7 |
| 4. Write about applications of Bioinformatics and Biocomputing in Microbiological Research | 14 |
| 5.a. Explain about the working principle and application of Atomic Force Microscopy | 7 |
| b. Give a detailed note on Inflammatory response. | 7 |
| 6.a. Discuss about mechanical extraction of algal oil and Conversion of algal oil into biofuels | 7 |
| b. Extraction techniques and chemical fingerprinting of phytochemicals from plant materials | 7 |
| 7. Explain about working principle and application of Transmission Electron Microscopy and Scanning Electron Microscope. | 14 |
| 8.a. Write a note on Immunology and its role in various medical and pharmaceutical applications | 7 |
| b. Write about Immune response | 7 |

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