QP Code: SN23BTECH215 | Reg. No | | | | | | | | | | | AY 23

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

B. Tech (Fifth Semester - Regular) Examinations, November 2025

23BBTPC35003 – Industrial Microbiology and Enzyme Technology

(Biotechnology)

Time: 3 hrs | Maximum: 60 Marks

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions

	Question	CO #	Blooms Level
a.	Differentiate between attenuated and inactivated vaccine.	CO2	K3
b.	Comment on the applications of glutamic acid.	CO2	K3
c.	Differentiate between auxotrophic strain and prototrophic strain.	CO4	K2
d.	Name two substrates used in the production of ethanol.	CO2	K3
e.	Write two applications of enzymes in medical therapy.	CO5	K2

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions

	Question	Marks	CO #	Blooms Level
2. a.	Discuss about different types of fermentation processes used in industry? Compare batch, fed-batch and continuous fermentation with suitable diagrams and advantages.	10	CO1	K3
	(OR)			
b.	Write short notes on stock culture and its importance.	5	CO4	K2
c.	Explain the upstream processing steps involved in industrial fermentation.	5	CO1	K3
3.a.	Explain about the detail commercial importance and production process of citric acid.	10	CO2	K3
	(OR)			
b.	How application of fermentation process is used in waste treatment?	5	CO1	K2
c.	Write detailed notes on industrial production of penicillin.	5	CO2	K2
4.a.	Explain strain improvement methods used in industrial microbiology with its application.	10	CO3	K3
	(OR)			
b.	Write a note on fermentation media and its components.	5	CO3	K2
c.	Explain about the isomerization action of enzymes with suitable examples.	5	CO5	K3
5.a.	Describe industrial-scale ethanol production from molasses including fermentation and distillation.	10	CO2	K3
	(OR)			
b.	Describe brief about various methods of screening of industrially important microorganisms.	5	CO3	K3
c.	Explain microbial production of cellulose.	5	CO2	K3
6.a.	Describe the design and major components of a typical industrial fermenter with a neat labelled diagram.	10	CO1	K3
	(OR)			
b.	Briefly describe about the process of solid-state fermentation? Explain its importance in industry.	5	CO1	K3
c.	Define molecular products. Classify molecular products derived from microorganisms with examples.	5	CO5	K3

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