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GIET UNIVERSITY, GUNUPUR – 765022

Ph.D. (Second Semester) Examinations, April – 2024

PPEBTS2015 - Bioprocess Engineering

(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
1.a. Discuss on environmental factors influence on microbial growth and product formation.	7
b. Write short notes on:	
(i) Secondary metabolites	7
(ii) Trophophase	
2.a. Define density and specific gravity? Compare density and specific gravity with suitable example.	7
b. What is a CSTR? Explain its structure and application.	7
3.a. Illustrate conventional fermentation.	7
b. Write notes on	7
(i) Fluidized bed reactor	
(ii) Air lifts Reactor	
4.a. Sketch out production of Lactic acid at industry.	7
b. What is yield coefficient? How yield coefficient affects biomass and product formation.	7
5.a. Explain microbial growth and death kinetics of microbial culture.	7
b. Write short notes on:	7
(i) Composition of mixture	
(ii) Stoichiometric Calculations	
6.a. Illustrate in details the Leudeking-Piret models and their application.	7
b. Write in details on batch and fed batch reactor with suitable diagram.	7
7.a. Draw a neat flow chat on steps involved in integrated bioprocessing.	7
b. Explain the law of chemical combination with suitable examples.	7
8.a. Write in details an unstructured kinetics model for microbial growth.	7
b. Explain in details industrial production of penicillin using microbes.	7

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