

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS:** M. Tech.  
**BRANCH:** Bioengineering and Biotechnology

**SEMESTER:** I  
**SESSION:** MO/2023

**SUBJECT:** BE515 PROCESS BIOTECHNOLOGY

**TIME:** 3 Hours

**FULL MARKS:** 50

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Microbes need different carbon sources. Explain the relationship between biomass and specific growth rate?	[5] 1	1
Q.1(b)	Elucidate the different types of product formation?	[5] 2,3	3
Q.2(a)	Explore the mechanism by which a biocatalyst can be made stable under operational conditions?	[5] 2	4
Q.2(b)	Assess the synthesis of a lipase producing bacteria with key features?	[5] 4,5	4
Q.3(a)	Discuss the important parameters considered for designing a sterilizer?	[5] 1,2	2
Q.3(b)	Examine the pathways of air filter sterilization in a fermenter?	[5] 3,4	3
Q.4(a)	Evaluate the process mechanism of production of lactic acid?	[5] 5	5
Q.4(b)	Investigate the utilization of biomass to value added products?	[5] 5	4
Q.5(a)	Illustrate the significance of vitamins synthesis using microbes?	[5] 4,5	5
Q.5(b)	Explore the mechanism of synthesis of beta lactam antibiotics?	[5] 3,4	4

:::28/11/2023 E:::