

No Preview  
Available

Total No. of Question : [4]

Registration No. : 

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**Programme Name : Bachelor of Chemical Engineering**  
**Regular B.Tech.Final Year (A.Y.2023-24) ESE Sem. VII Nov.2023**  
**VII SEMESTER ( 2020 BATCH)**  
**201CHL 405-Bio Chemical Engg.**

Duration : [ 02:00 PM - 04:00 PM ]

Date : 02 Dec, 2023

Day : Saturday

Marks : 50

**Instructions :**

**1.Read questions carefully.**

- (Q1) **All Questions are compulsory.** [20.0]  
(1.1) Discuss the scope for chemical engineer in biochemical engineering field. [6.0]  
(1.2) What do you understand by "enzymes", Describe its characteristics and applications in biochemical field. [7.0]  
(1.3) Discuss the different phases of bacterial cell growth. [7.0]
- (Q2) **All Questions are compulsory.** [10.0]  
(2.1) Describe the alcohol fermentation process in detail. [6.0]  
(2.2) How the animal cells are cultivated? [4.0]
- (Q3) **All Questions are compulsory.** [10.0]  
(3.1) What are downstream processes? How they are classified? [3.0]  
(3.2) Describe the details about adsorption phenomena in biochemical industries, use various interactive forces and isotherms to support it. [7.0]

**OR [ 3.2 / 3.3 ]**

- (3.3) Baker's yeast is separated by using a continuous disc-stack centrifuge, which is operated at 6000 rpm. 50% of the cells are recovered at a feed rate of 50 L/min. Recovery of solids is inversely proportional to the flow rate at a constant centrifuge speed.  
(a) What flow rate is required to obtain 90% cell recovery if the centrifuge speed is operated at 5000 rpm? [7.0]
- (Q4) **Attempt any two out of three questions.** [10.0]  
(4.1) Discuss the various stages involved in bioprocess modeling. [5.0]  
(4.2) What are various approaches used in bioprocess modelling, discuss them in details. [5.0]  
(4.3) What do you mean by protein engineering? Discuss their objective and various techniques use in protein engineering. [5.0]

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