
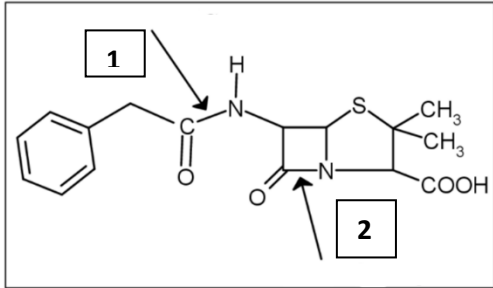
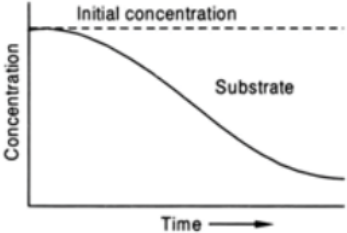
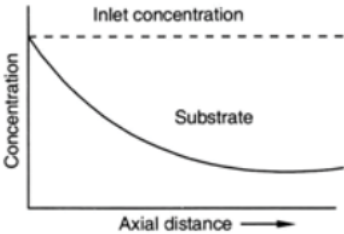
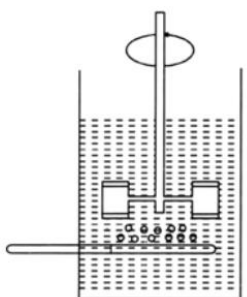
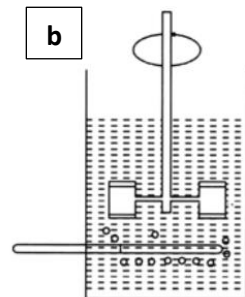


Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, May 2022			
Course: Industrial Microbiology		Semester: IV	
Program: B.Sc. Microbiology		Time : 03 hrs.	
Course Code: HSMB 2008		Max. Marks: 100	
Instructions:			
Q.No	Section A Short answer questions/ MCQ/T&F	(20Q x1.5M= 30 Marks)	COs
Q	Statement of question		CO
1.	Industrially useful microorganisms are a. Bacteria b. Fungi c. Yeast d. All of the above	1.5	CO1
2.	Enlist important characteristics of microorganisms for industrial use (2 important points).	1.5	CO1
3.	The purification and recovery of the production after fermentation is called a. Upstream process b. Downstream process c. Surface fermentation d. Batch fermentation	1.5	CO3
4.	Wine production involves preparing from grapes a. Carbon dioxide b. Must c. Acetic acid d. Wort	1.5	CO1
5.	Which of the following is a disadvantage of immobilized enzymes? a. Immobilization process allows continuous process b. Immobilization means additional cost c. Increases productivity d. Immobilization prevents loss of activity	1.5	CO2
6.	In the industrial production of streptomycin, the secondary metabolite or byproducts is a. Vitamin – B12 b. Vitamin – C	1.5	CO3

	c. Vitamin – B6 d. Ethanol		
7.	Industrial enzyme commonly used in cheese making is called	1.5	CO3
8.	Proteases are useful inindustry	1.5	CO1
9.	Name the enzyme used in stone-washing of denims.	1.5	CO1
10.	Insulin is industrially produced by using as host. a. <i>E. coli</i> b. Mammalian cells c. Yeast d. Plant cells	1.5	CO3
11.	Hops do the following : a. Add bitterness to beer b. Are antimicrobial c. Give aroma to Beer d. All of the above	1.5	CO1
12.	Which of the following carbohydrates are mainly present in whey? a) Glucose b) Lactose c) Fructose d) Sucrose	1.5	CO1
13.	The following can be used as an antifoam agent a. Silicon compounds b. Lard oil c. Soyabean oil d. All of the above	1.5	CO1
14.	Name one microbe used for commercial production of cellulase.	1.5	CO1
15.	Cloudiness of Beer is removed by	1.5	CO3
16.	There are two arrows in the figure where two enzymes act, write the names of the enzymes 1 and 2. 	1.5	CO1
17.	Name a secondary metabolite which is industrially useful.	1.5	CO3

18.	Differentiate between biochemical and chemical reactions.	1.5	CO1
19.	A person autoclaved media with Glucose and black colored media was obtained instead of regular brown to yellow color. What do you think has happened? And what should have been done to avoid this?	1.5	CO1
20.	The two graphs looks almost same but they belong to two different fermenters. Mention the type of fermenter 1 and fermenter 2.	1.5	CO2
	<div style="border: 1px solid black; display: inline-block; padding: 2px; margin-bottom: 10px;">1</div>  <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-top: 10px;">2</div> 		
	Section B	(4Qx5M=20 Marks)	CO
Q	Statement of question		
1.	Explain down streaming of antibiotic by counter current extraction process. Where is it commonly employed?	5	CO3
2.	What are components of good production media?	5	CO2
3.	Describe industrial production, use and recovery of Amylase. What are differences between bacterial and fungal amylases? (3+2).	5	CO3
4.	What are auxotrophs? Why are they so important in industrial microbiology? Name one auxotroph and its industrial use.	5	CO1
	Section C	(2Qx15M=30 Marks)	
Q	Statement of question (Case studies)		CO
1.	<p>An cell extract was added to catalyze an enzymatic reaction. However when analytical techniques were followed, the cell extract led to interference in product detection. Based on your knowledge of industrial microbiology answer the following :</p> <p>(i) What could have you done better to avoid this interference? (2)</p>	15	CO1

	<p>(ii) Explain various methods that could have been followed in order to avoid mixing of reactants and products of an enzyme catalyzed reaction. (7)</p> <p>(iii) On the same lines, a different enzyme you want to use to catalyze the reaction is an exocellular fungal enzyme. What kind of fermenter would you recommend so that fungal mycelium grows well. Explain any one type of fermenter which you would use for production of fungal enzyme. (6)</p>		
2.	<p>There are two designs of fermentor below with one difference which is important for the economy of the fermentation process. Based on your expertise; answer the following:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>a</p>  </div> <div style="text-align: center;"> <p>b</p>  </div> </div> <p>a) What is the device that is operating differently in two fermenters? (1)</p> <p>b) What does it do? (1)</p> <p>c) Do all fermenters have this device? Comment (2)</p> <p>d) Which is the most sustainable/durable fermenter amongst the two? Why was the need to design a fermenter with altered device orientation? (4)</p> <p>e) With the help of an illustration; label various parts of a fermenter. (7)</p>	15	CO3
Section D		(2Qx10M=20 Marks)	
Q	Statement of question		CO
1.	What steps would you follow to isolate an organism producing an antibiotic?	10	CO1
2.	Write in detail industrial production of Beer.	10	CO3