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SARDAR PATEL UNIVERSITY

M. Sc. Integrated Biotechnology (IG-GBT) 8th Semester Theory Examination - April 2015 PS08CIGGB2 - Bioprocess Engineering & Technology 23rd April 2015 (Thursday), 2:30 to 5:30 pm

Maximum Marks: 70

		With the state of	3. /0	
Note	(1) All Questions are Compulsory. (2) I	Figures on the right indicate marks.		
Q.1	Select the most appropriate option		1 x 8= 8	
	(i) Some chemicals, when added to certain fermentation process, are directly incorporated into the desired product are called a. Buffers b. Precursors			
	c. Inducers	d. By product		
	(ii) In gassing out method, a membrane O ₂ electrode is utilized which records			
	a. Dissolved O ₂ activity b. Dissolved O ₂ tension C. a & b d. a or b			
	(iii) Thermal inactivation of nutrients			
	a. Increases with temperature rise			
	b. Decreases with temperature rise			
	c. Increases with temperature rise but decreases at high temperature			
	d. It is not affected by temperature			
	(iv) Del factor is			
	a. Sterilization criteria	b. ln No/Nt		
	c. Both a & b	d. Only b		
		d. Omy b		
	(v) K _{La} is	1 William Committee Commit		
	a. Mass transfer coefficient	b. Volumetric Oxygen transfer coefficient		
	c. OTR	d. Critical Oxygen level		
	(vi) Dissolved oxygen is measured with			
	 a. Polarographic electrode 	b. Galvinic electrode		
	c. pH electrode	d. both a & b		
	(vii) dC _L /dt is			
	a. mass transfer coefficient			
	b. change in oxygen concentration over a time period t			
	c. Driving force			
	d. None of the above			
	(viii)are the examples of antifoam agents used in the fermentation			
	media preparation.			
	a. Calcium bisulphate & Bromide	b. Silicons & sulphonates		
	c. Cephalosporin	d. All of the above		
	• •	•		
Q.2.	Attempt any seven of the following		2 x	
			7 = 1.4	

Explain the significant role of electrodialysis in product purification.
 Define the role of chelators in fermentation media with two examples.

	3. Explain the role of growth factors with example in fermentation media.	
	4. What is fed batch fermentation?	
	5. Explain Bingham plastic rheology.	
	6. What does dC_1/dt denotes and what is its significance.	
	7. Enlist various temperature measure devices utilize in fermentor.	
	8. Explain the role of orifice sparger in the aeration system of the fementor.	
	9. What is reverse phase chromatography (RPC)?	
Q. 3.	a). Discuss various carbon sources used in media preparation at industrial level.	6
Q . 5.	b). Enlist the various types of impellars used in industrial fermentors and explain the	
	most widely used impellar.	6
	OR	
	b). Explain the ideal characteristics of an antifoam agent and discuss its role in a	6
	fermentation process	Ū
	8 1.	
Q. 4.	a). Describe continuous sterilization process.	6
	b). Discuss the air sterilization and filter designing.	
	OR	6
	b). Justify: Same degree of sterilization can be achieved over a time temperature	6
	regime.	Ü
Q. 5.	a). KLa.is a yardstick of any fermentation process. – justify	6
ζ. υ.	b). Write a note on: PID controller.	6
	OR 3	·
	b). Discuss gassing out method for determination of K _{La} .	6
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2. 6.	a). Write a note on: liquid-liquid extraction with suitable example.	
	b). Explain cell recovery process by filtration.	
	OR	
	b). Discuss Ion exchange chromatography method with suitable example.	6
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