

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2012343

Roll No.

B.TECH

Regular Theory Examination (Odd Sem - V) 2016-17

BIOPROCESS ENGINEERING

Time : 3 Hours

Max. Marks : 100

Section - A

Note: Attempt all the questions (10×2=20)

1. a) Explain Reynolds number.
- b) What is dilution rate?
- c) Explain Henry's law.
- d) Define KLa?
- e) What is power number?
- f) Define Bingham plastic?
- g) Explain yield coefficient.
- h) Batch culture is a closed or open system. Explain.
- i) What is Monod equation?
- j) Explain Heat transfer coefficient.

Section - B

Note: Attempt any three questions with Answer in 100-200 words. (3×10=30)

1. Write a note on simple product formation kinetics.

2. Discuss the various methods to calculate theoretical yield coefficient.
3. Discuss various methods and concepts of sterilization.
4. What is meant by critical oxygen concentration and its significance with respect to cell growth?
5. Explain Stirred bioreactors.

Section - C

Note: Attempt all questions with answer in 300-500 words. (5×10=50)

1. Explain the equation showing relationship between dilution rate, substrate conc. And product formation with suitable graphs?
2. Explain the fed batch mode of fermenter operation in terms of features, advantages, disadvantages, concentration, time profiles, mass balances and examples.
3. What operations can be performed to achieve aseptic conditions and containment during fermentation?
4. Describe the steps involved in the modeling and simulation of bioprocesses.
5. What is meant by critical oxygen concentration and its significance with respect to cell growth?

