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Total Number of Pages: 02

M.TECH
BTPC 201

2ND Semester Regular/ Back Examination – 2015-16
ADVANCED BIOCHEMICAL ENGINEERING

Max marks: 70

Time: 3 Hours

Q. Code: W880

Answer Question No.1 compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

- Q1 Answer the following questions: (2 x 10)
- a) Define Arrhenius equation.
 - b) Explain synchronous growth.
 - c) Write down different parameters for scale up process.
 - d) Describe the basic aspects of reaction theory.
 - e) Define chemostat.
 - f) Explain dilution rate.
 - g) 5M of an ideal gas expand isothermally from 1.2L to 12L at 310K. Calculate the change of free energy of gas ($R=8.314 \text{ J K}^{-1} \text{ mol}^{-1}$).
 - h) What is the Space time for N number of CSTR connected in series (1st order reaction)?
 - i) What is tracer? Explain with example.
 - j) What are the limitations of Monod's Model?
- Q2 a) Differentiate between Plug flow reactor and Continuous reactor. (5)
b) Differentiate between Ideal and non ideal reactors. (5)
- Q3 Define Growth kinetics. Briefly explain the kinetics of batch culture and its application. (5)
- Q4 Define residence time distribution. Describe the two models available for predicting the non ideality flow behavior in bioreactor. (10)
- Q5 a) Briefly describe multiple reactor with volume effect. (5)
b) Briefly explain the reactor stability. (5)
- Q6 a) Write notes on fluidized bed bioreactors. (5)
b) Write down the different process design and operation of various bioreactors. (5)
- Q7 a) Give description of criteria for bioreactor selection. (5)
b) Give notes on material balance for ideal reactors. (5)
- Q8 Write short notes on (5 x 2)
- a) Continuous growth kinetics
 - b) Models of non ideal flow