



KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Food Engg) 2017 Admission
III Semester Final Examination-January 2019

Fdqu.2103

Bio Chemical Engineering (1+1)

Marks:50
Time:2 hrs

I Fill in the blanks:

(10x1=10)

- 1 Swirling and vortex formation can be prevented by _____
- 2 A reactor has a total volume of 50,000 liters. If it has a headspace volume of 10,000 liters, then volume of liquid in the reactor will be _____
- 3 A mixed fermentation is one, which produces _____
- 4 Heat transfer rates will be lowest in _____ reactor
- 5 Micro filtration refers to the separation of suspended material such as bacteria by using a membrane with spore sizes of _____

State true or False

- 6 Competitive inhibition pattern based on Michaelis Menten equation
- 7 Yield coefficient represents production time of biomass or product
- 8 During fermentation process the of the yield of ATP is low
- 9 The specific death rate of an organism can be expressed as $\ln 2/D$
- 10 In international classification Ligases belongs to class two enzymes

II Write Short notes on ANY FIVE of the following

(5x2=10)

- 1 What is scaling up of bioreactors?
- 2 Factors affecting the value of $k_L a$.
- 3 Compare batch and continuous sterilization
- 4 Membrane process.
- 5 Define LB plot, and where it is used
- 6 Types of heat exchangers used in bioreactors
- 7 Classification of enzymes

III Answer ANY FIVE of the following

(5x4=20)

- 1 Discuss application of enzymes in food industry
- 2 Downstream processing
- 3 Importance of aeration and agitation
- 4 Mass transfer coefficient for bubbles in biochemical reactions
- 5 Michaelis Menten Kinetics
- 6 Fed batch culture
- 7 Design of packed bed reactor

IV Answer ANY ONE of the following

(1x10=10)

- 1 Batch and continuous sterilisation process in large scale.
2. Separation of insoluble products from fermentation broth.
