KERALA AGRICULTURAL UNIVERSITY
B.Tech. (Food Engg. & Tech.)- 2019 Admission

III Semester -Final Examination-February-2021

Fdqu.2103   **Biochemical Engineering (1+1)**   Marks:50
                                                                  Time:2 hrs

I   **Fill in the blanks:**   (10x1=10)
1. The name of mechanical method used to sterilize fermentation media is _____.
2. A fed-batch reactor initially contains 2 litre of medium. If it was fed at 1 litre per hour, then after 10 hours, the volume of the reactor will be _____.
3. A culture system with constant environmental conditions maintained through continual provision of nutrient and removal of wastes is called _____ culture system.
4. In chemostat _____ is controlled by increasing and decreasing flow of culture medium.
5. A type of bacterial growth where the cells never reach its stationary phase is called _____ culture.

   State true or False
6. Axial flow impellers are suited for use in shear sensitive processes.
7. Air can be sterilized by chemical agents.
8. Batch culture method is steady state process.
9. Baffles are not disrupt vortex and provide better mixing.
10. Reynolds number is calculated from the diameter and peripheral speed of the impeller.

II   **Write Short notes on ANY FIVE of the following**   (5x2=10)
1. Stability analysis of reactors
2. Define liquid - liquid extraction
3. Distinguish growth medium and production medium
4. Describe turbidostat
5. Application of enzymes in food industry
6. Mass transfer coefficient
7. Application of fermenter in food industry

III   **Answer ANY FIVE of the following**   (5x4=20)
1. Describe ion exchange chromatography method
2. Sterilization of gases
3. Describe quasi-steady state assumption of simple enzyme kinetics
4. Describe instrumentation for measurements of physical environment in fermentation
5. Discuss about ultra-filtration
6. How do you calculate Km and Vmax values?
7. Describe bubble column reactor

IV   **Write an essay on ANY ONE of the following**   (1x10=10)
1. Explain detail about continuous stirred tank reactor design and its application.
2. Derive Michaelis –Menten equation for single substrate enzyme catalyzed reaction.

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