KERALA AGRICULTURAL UNIVERSITY
B.Tech. (Food Engg.) 2019 Admission
V Semester Final Examination-January 2022

Fdsc.3105   **Fermentation Technology (1+1)**   **Marks:50**
    Time:2 hours

I   **Fill in the blanks**   **(10x1=10)**
1. The potential spoilage organism in beer is……………………………..
2. The organism found at the initial stages in the batter of idli………………
3. Milk fermentation to produce cheese is done initially by inoculating with…………………………………
4. Too long a fermentation of sauerkraut may favour the growth of………….
5. Doubling time (t_d) is equal to…………………………………..
6. ………………are widely used as mechanical methods for cell discuption.
7. Spirulina is highly digestive because of…………………………….
8. In a batch process, the system properties varies with……………………
9. If the total time duration upto log phase is 't' then the lag time(L) can be represented as…………………………………….
10. The flow of medium to be filtered is tangential to the membrane in …………………….…filtration.

II   **Write short notes on ANY FIVE of the following**   **(5x2=10)**
1. Fed-batch fermentation
2. Endogenous decay
3. Fluidized bed and Bubble column reactor
4. Significance of viability in the fermentation
5. Solid state fermentation and submerged fermentation
6. Purification steps of Citric acid.
7. Removal of Nucleic acid from SCP

III   **Answer ANY FIVE of the following**   **(5x4=20)**
1. Derive an expression for batch reaction time for substrate consumption in enzyme batch reactor.
2. Discuss the different types of centrifuges.
3. Comment on merits and demerits of filter aids used in the filtration.
4. Elucidate the major steps of DSP in Fermentation Technology.
5. At t=3hrs, the cell density was determined to be 2.6×10^8 cells/ml. If 3.5 ml of culture are withdrawn at that time and the aliquot is centrifuged to pellet the cells and the pellet is then resuspended in 7ml of nutrient broth. What is the new cell concentration?
6. What is mechanism of mixing? Discuss baffle arrangements and flow patterns in agitated tanks.
7. If a pilot sterilization is carried out in a 500 m^3 vessel with a medium containing 10^6 organisms/cm^3. If the probability of contamination is 1 in 1000. Calculate the Del factor.

IV   **Write an essay on ANY ONE of the following**   **(1x10=10)**
1. Derive an expression for lag time and doubling time of microbial growth in batch cultivation.

2. What are the primary events that occur during the fermentation of milk products? Do we know the secondary metabolism of fermented dairy products and its effect on cheese?

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