53 (FPT 712) FRTC

2018

FERMENTATION TECHNOLOGY

Paper : FPT 712

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions from **seven**.*

1. Define the following : ***(any five)*** 4×5=20

   (a) Stoichiometry

   (b) Respiratory Quotient

   (c) Theoretical oxygen demand

   (d) Del factor (sterilization job)

   (e) Maintenance coefficient of microbial cell

   (f) Dilution rate in CSTR

   (g) Effectiveness factor of immobilized enzyme.

Contd.

2. Draw microbial cell growth curve and discuss briefly.

Write microbial cell growth rate equation. What is specific growth rate and doubling time ? What is the unit of specific growth rate ? 10+4+5+1=20

3. Briefly write about batch, continuous and fed batch mode of culture, specifically mentioning their individual operational strategy. 20

4. Write short notes on : ***(any two)*** 10+10=20

   (a) Requirement of agitation and aeration in fermentation.

   (b) Immobilized enzyme in Plug Flow Reactor.

   (c) Dynamic method for estimating $K_L a$ value (volumetric oxygen transfer coefficient).

5. *(a)* Write about the following : ***(any two)*** 10+10=20

   (i) Monod equation

   (ii) Michaelis-Menten equation (with assumptions)

   (iii) Luedeking and Piret equation.

6. Write about fermentative productions of fermented food like fermented dairy product, fermented vegetable, soya sauce etc. 20

7. Write about fermentative production of a commercially important food enzyme and its purification steps from the fermentation broth. 20