

[A-6]

SEAT No. _____

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Sardar Patel University
M. Sc. IGBT, Eighth Semester Examination
Friday, 22nd March, 2019
02:00 p.m. – 05:00 p.m.
PS08CIGGB2: Bioprocess Engineering and Technology

Total Marks: 70

- Q1. Multiple Choice Questions (Attempt all questions). [8 X 1 = 8]
- Some chemicals when added to certain fermentation process are directly incorporated into the desired product are called
 - Buffers
 - Inducers
 - Precursors
 - By products
 - The del factor is
 - Sterilization criterion
 - $\ln N_0/N_t$
 - Both a & b
 - None
 - The mechanical means of accomplishing sterilization of fermentation media/equipment is
 - Ultrasonic
 - Chemical agents
 - Radiation
 - All of these
 - The highest temperature which appears to be feasible for batch sterilization is
 - 121°C
 - 100°C
 - 105°C
 - 130°C
 - In a fermenter _____ prevents vortex formation and improves aeration efficiency.
 - Impellar
 - Baffles
 - Sparger
 - Stirrer glands
 - The uniform mixing of nutrients in a fermenter vessel is obtained with the help of
 - Baffle
 - Impellar
 - Sparger
 - All of these
 - _____ are examples of antifoam agents used in the fermentation media preparation.
 - Calcium bisulphate & Bromide
 - Silicones and sulphonates
 - Cephalosporins
 - All of the above
 - Scraper discharge is the cake discharge mechanism observed in _____ filters.
 - Pressure leaf filters
 - Plate and frame filters
 - Rotary Vacuum filters
 - Cross flow filters
- Q2. Attempt any seven of the following: [7X2=14]
- Give two advantages of spiral heat exchanger used for continuous sterilization.
 - What is X_{90} ?
 - Define Chemostat
 - What is fed batch fermentation?
 - Explain Casson body rheology.
 - Write a note on Depth filter?
 - Give examples of filter aids.
 - What is reversed phase chromatography?
 - Explain biological containment.

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(P.T.O.)

Q3(A) Enumerate the points that must be considered while designing and constructing an ideal fermenter. [6]

Q3(B) Discuss the body construction of a fermenter with emphasis on construction materials to be used. [6]

OR

Q3(B) What is an agitator? How many types of agitators are there? Explain with suitable diagrams. [6]

Q4(A) What is Nabla factor? Derive an equation to establish relation between Nabla factor and Arrhenius constant. [6]

Q4(B) Write a detailed note on Nutrient Quality Criterion Q. [6]

OR

Q4(B) Explain Internal Feedback System with the help of a diagram. [6]

Q5(A) What is K_{La} ? What is its significance? Explain sulphite oxidation technique for determining K_{La} . [6]

Q5(B) Write a note on Bingham plastic rheology. [6]

OR

Q5(B) Give simplified layout of computer controlled fermenter with only one control loop. [6]

Q6(A) Explain Plate and frame filters used in downstream processing. What are its pros and cons? [6]

Q6(B) Write a note on Tubular bowl centrifuge. [6]

OR

Q6(B) Explain ultra-filtration and reverse osmosis. [6]

END OF QUESTIONS

— X —
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