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Sardar Patel University

M Sc II Semester Microbiology/Biotechnology

PS02CMIC21/BIT21 Bioprocess and Biochemical Engineering

External Theory Examination

Date : 28th December, 2020 Max Marks : 70

Time: 10:00 to 12:00 am

Q. 1 (A) Choose the correct answer (08)

1. Which of these is not a carbon source
   a) soyabean meal b) molasses
   c) vegetable oils d) All are carbon sources

2. Bourdons tube is used to measure
   a) weight b) temperature
   c) pressure d) pH

3. Lyophilization is a method for
   a) Aeration b) culture preservation
   c) Cell disruption d) Cell separation

4. Plug flow reactors are a type of
   a) pneumatic systems b)imperfectly mixed bioreactors
   c) fed batch reactors d) sterilizers

5. Baffles are associated with
   a) agitation aeration b) solvent extraction
   c) cell disruption d) filtration

6. Find the odd one out
   a) cyclone column reactor b) pressure cycle reactor
   c) deep shaft reactor d) air lift reactor

7. The 'a' in K_La is
   a) area b) surface area
   c) surface area/volume d) agitation

8. Load cells are used to measure
   a) Weight b) pressure
   c) pH d) Temperature

Q. 1 (B) Do as directed (One mark each) (16)

1) Expand SCADA
2) What is CIP/SIP?
3) Define Del factor
4) Total sterilization can never be achieved, True or False?
5) Chemostat is a kind of control system, True or false?
6) Give one example of pneumatic system
7) Cyclone column reactor is a type of _____ system
8) The scale of operation between small scale and large scale is called as _____ scale.
9) Identify this equation: $\mu = \mu max [S]/Ks + [S]$
10) Name two types of control loops in control of process parameters
11) What is the importance of Fick's law?
12) What is the use of Clarke electrode?
13) Rotameter is used to measure rpm in agitation, True or false?
14) Define dilution rate
15) What is the aim of secondary screening?
16) Super critical fluid extraction is used in _____

Q. 2 Explain the terms in brief: **(any seven)** (14)

a) fed batch cultivation
b) containment
c) Culture degeneration
d) K_La
e) Cross flow filtration
f) Sterilization
g) Freeze drying
h) Mixing time
i) Mass transfer

Q. 3 Explain in short various carbon sources (08)

OR

Write a note on Primary screening (08)

Q. 4 Discuss the design of a laboratory scale fermentor (08)

OR

Explain the kinetics of a batch sterilization process (08)

Q. 5 Write a note on PID controllers (08)

OR

Explain fed-batch cultivation (08)

Q. 6 Write a note on solvent extraction (08)

OR

List various methods for product recovery and discuss any one in detail (08)

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