

SARDAR PATEL UNIVERSITY
M.Sc, (Integrated) Biotechnology
Sixth semester Examination
Friday 1st April, 2016
2:30 pm to 5:30 pm
PS06CIGB03: Industrial Microbiology

Total Marks: 70

Q. 1 Choose the correct answer

(08)

- 1 _____ is the preservation method in which the freezing of a culture followed by its drying under vacuum, which results in the sublimation of the cell water
 (a) Soil stocks (b) Lyophilization
 (c) Agar slopes (d) Glycerol stocks
- 2 The Scaba 6SRGT, the prochemMaxflo T, the lightning A315 and the EkatoIntermig which are the modern agitators derived from _____
 (a) Disc turbines (b) Vaned disc.
 (c) Open turbines of variable pitch (d) marine propellers
- 3 Driving force of a fermentation process is _____
 (a) C^* (b) C^*-C_L
 (c) $K_L a$ (d) dC_L/dt
- 4 Some chemicals, when added to certain fermentations, are directly incorporated into the desired product are called _____
 (a) Buffers. (b) Inhibitors
 (c) Inducers (d) Precursors.
5. Which one of the following method is not used for sterilization of media?
 (a) Filtration (b) Radiation
 (c) Agitation (d) heat
- 6 Microorganisms produce secondary metabolites like antibiotics usually during _____ phase of growth.
 (a) Lag phase (b) Tropophase
 (c) Idiophase (d) Death phase
7. Deindoerfer and Humphrey (1959) used the term $\ln \frac{N_0}{N_t}$ as a design criterion for sterilization, which has been also called the _____.
 (a) Del factor (b) Delta factor
 (c) Rho factor (d) Gamma factor
8. Chemical name of citric acid is _____
 (a) Ethanedioic acid (b) 1-Hydroxypropane-1,2,3-tricarboxylic acid
 (c) 2-Hydroxybutanedioic acid (d) 2-Hydroxypropane-1,2,3-tricarboxylic acid

Q. 2 Short Questions (Attempt Any Seven)

(14)

- 1 Enlist the Uses of citric acid.
- 2 Write the ideal characteristics of fermentation medium.
- 3 Explain the terms primary and secondary metabolites.
- 4 Enlist the characteristics of industrially important microorganisms.
5. Write the applications of amylase.
- 6 Explain the function of baffles and sparger.

7. Define batch culture and continuous culture fermentation process
8. Enlist the devices used in pressure measurement.
9. List out different types of thermometer used for Measurement of Temperature.
- Q. 3(a) Define Primary screening .Explain in detail the Auxanography technique. (06)
- Q. 3(b) Discuss with suitable examples for the isolation of induced mutant producing improved yields of secondary metabolites. (06)
- OR**
- Q. 3(b) Enlist various methods of preservation of industrially important microorganisms Explain lyophilization method in detail.
- Q. 4(a) Discuss in detail the crude carbon sources used in fermentation medium and factors affecting choice of carbon and nitrogen sources in fermentation medium. (06)
- Q. 4(b) Explain the design of continuous sterilization process with labelled diagram. Write advantages of continuous sterilization over batch sterilization. (06)
- OR**
- Q. 4(b) Explain mechanisms of filter sterilization and discuss the classification of filters with their advantages and disadvantages. (06)
- Q. 5(a) Give an account on components involved in aeration and agitation. (06)
- Q. 5(b) Explain the various functions of fermenter and describe the body construction of a Fermenter (06)
- OR**
- Q. 5(b) Enlist various methods used for determining $K_L a$. Explain any one method in detail. (06)
- Q. 6(a) Discuss in brief on batch, continuous and solid state fermentation (06)
- Q. 6(b) Explain the process of amylase production by fermentation (06)
- OR**
- Q. 6(b) Write a note on Solvent extraction method for product recovery with suitable example. (06)

$x = x = x$

(2)