SEAT No._____ No. of Printed Pages : 2

[59/A-35]

SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar
T. Y. B.Sc. (V Semester) Examination
Monday, 16-04-2012, Time: 2:00 p.m. to 5:00 p.m.
US05CMIC06(MICROBIOLOGY)
FERMENTATION TECHNOLOGY

Maximum Marks: 70

Q.1. Each question below gives a multiple choice of answers. Choose the most appropriate one. [10]

1 Which of the following is the most important characteristic for the producing strain
(a) it should be a high yielding strain
(b) It should not have a stable biochemical characteristic
(c) It should produce undesirable products
(d) Opt temperature of the organisms should be 10°C

2 _____ technique is used to detect microorganisms which produce growth factors
(a) Crowded plate technique
(b) Enrichment culture
(c) Auxanography
(d) All of these

3 Which of the following is used as an agent to fuse protoplast
(a) Sucrose
(b)PEG
(c) Glycerol
(d) Glycerine

4 Short wavelength UV rays damages DNA by causing_____
(a) cytosine-cytosine dimers
(b) Thymine cytosine dimers
(c) Adenine-thymine dimers
(d) Thymine-Thymine dimers

5 Phenyl Acetic Acid is used as a_____ in production of Penicillin G by *P. chrysogenum.*
(a) Precurssor
(b) Inducer
(c) Repressor
(d) Carbon source

6 _____ are the parts of aeration and agitation in a fermenter vessel.
(a) Stirrer glands &bearings
(b) Baffles
(c) Sparger
(d) All of these

7 Galvanic and Polarographic electrode are used to measure_____ during fermentation.
(a) pH
(b) DO
(c) Temperature
(d) Foam

8 Which of the following can be used as a reactor in solid state fermentation
(a) Tray fermenter
(b) Airlift fermentor
(c) CSTR
(d) Bubble- column reactor

9 Which organism is used to check the efficiency of sterilization
(a) *B.cereus*
(b) *B. megatarium*
(c) *Cl. acetobutylicum*
(d)*B. stearothermophilus*

10 An aerated bioreactor will increase oxygen transfer rates with the adition of detergents because it
(a) Enhances bubble coalescence
(b) causes bubble to expand
(c) discourages bubble coalescence
(d) Increases the surface tension

Q. 2 Short Questions (Attempt any TEN) [20]

1 How can enzyme producers be isolated from a natural sample.
2 Draw a schematic representation of a typical fermentation process.
3 Explain the terms primary and secondary metabolite and give one example each.

(P.T.O.)

4 What do you mean by feedback inhibition and feedback repression.
5 Inducer plays an important role in product formation in a fermentation process.
6 Enlist the ideal characteristics of a fermentation medium.
7 What is impeller? What is its function and its types.
8 Differentiate between batch and continuous fermentation
9 What are the advantages of SSF.
10 How can you achieve avoidance of contamination in a fermentation process?
11 What are the advantages of continuous steam injection during sterilization process.
12 Define QO_2 and K_La

Q. 3 [A] Write a short note on Auxanography [05]
[B] How would you go about for the isolation of an antibiotic producers [05]

OR

Q.3 [A] Define Screening? Explain why secondary screening is Qualitative and Quantitative in approach [06]
[D] Enlist the characteristics of industrially important microorganisms [04]

Q. 4 [A] Write a note on Protoplast fusion as a method of strain improvement. [04]
[B] Discuss the strategy to obtain hyper penicillin production using a suitable auxotrophic mutant [06]

OR

Q.4. Discuss with an example the mechanism of physical and chemical mutagen for strain improvement [10]

Q. 5 Discuss in detail the design of a fermenter and its structural components [10]

OR

Q.5. [A] Write a note on : Air lift fermenter [05]
[B] Write a note on Batch fermentation and Fed Batch fermentation [05]

Q. 6 What is inoculum, discuss the criteria for ideal inoculum and write about its development and its addition [10]

OR

Q.6. What is mass transfer coefficient? What is its significance in fermentation and enlist the factors affecting them and explain medium rheology and biomass. [10]

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