

(A-4) Seat No: _____

No. of Printed Pages: 2 SC

SARDAR PATEL UNIVERSITY

5th Semester B. Sc. EXAMINATION 2016 (NC)

Monday,

16th May, 2016

10:30 am to 1:30 pm

SUBJECT: MICROBIOLOGY US05CMIC06
(Fermentation Technology)

TOTAL MARKS: 70

Note: (1) All the questions are compulsory.
(2) Figures on the right indicate marks.

Q-1 Select the correct answer for each question from the option given below. [10]

1. Fermentation is the _____
 - a) Production of alcoholic beverages by microbes
 - b) Mass control culture of microbes to synthesize product
 - c) Use of microbes in sewage and pollution control
 - d) All of the above
2. In screening _____ of industrially important microorganisms takes place
 - a) Isolation
 - b) Detection
 - c) both a & b
 - d) None of the above
3. Primary screening of organic acid producing microorganisms can be done by
 - a) In corporation of neutral red in medium
 - b) In corporation of bromothymol blue in medium
 - c) In corporation of CaCO₃ in medium
 - d) All of the above
4. Which of the following mutagen act as an alkalytic agent
 - a) Base analoge
 - b) UV radiation
 - c) Ethyl methyl sulphonate
 - d) Hydroxyl amine
5. Which of the following can be used as carbon source in fermentation medium ?
 - a) Molases
 - b) Alkanes
 - c) sulphite waste liquor
 - d) All of the above
6. Which of the following is added as a precursor for the production of penicillin G
 - a) Phenyl acetic acid
 - b) Citric acid
 - c) Glauconic acid
 - d) Leucine
7. Baffles are metal strips roughly _____ of the vessel diameter
 - a) 1/2
 - b) 1/10
 - c) 1/4
 - d) 1/3
8. In fermentation process, closed system is associated with _____
 - a) continuous fermentation
 - b) fed batch fermentation
 - c) batch fermentation
 - d) None of the above
9. Oxygen transfer rate is increased with an increase in the stirrer speed in aerated bioreactor because
 - a) it decreased the bubble size
 - b) it decreased the size of the boundary layer surrounding bubble
 - c) it increased the rate of movement of oxygen molecules through the bulk liquid
 - d) all of the above
10. Which organism is used to check the efficiency of the sterilization
 - a) *Bacillus thuriengensis*
 - b) *Bacillus subtilis*
 - c) *Bacillus stearothermophilus*
 - d) *Bacillus megaterium*

①

(P.T.O.)

Q-2 Answer the following questions in short. (Any ten)

1. What are the various ranges of fermentation processes?
2. What are the characteristics of industrially important microorganisms?
3. Explain: Auxanography
4. Explain the role of inhibitors in the fermentation medium.
5. List out all physical and chemical mutagens used for strain improvement.
6. Describe on the substrates used as a nitrogen source in fermentation medium.
7. Define screening and enlist the various methods.
8. Write a note on: Chemo stat.
9. Explain: Baffles
10. Describe the effect of the degree of agitation on KLa
11. Explain: Scale down
12. Define: Del factor

Q-3 a) What is secondary screening? Explain any five significance associated with secondary screening. (05)

b) Describe primary screening of organic acid producers. (05)

OR

Q-3 (A) What are the component parts of fermentation process. (04)

(B) Explain in detail auxanography & enrichment culture technique. (06)

Q-4 (A) Discuss the mechanism of chemical mutagen for the strain improvement. (05)

(B) Explain sexual and parasexual cycle for strain improvement. (05)

OR

Q-4 (A) Discuss the mechanism of physical mutagen for the strain improvement. (05)

(B) Define auxotrophic mutant with example of secondary metabolite production. (05)

Q-5 (A) Describe in detail: design of fermenter (10)

OR

Q-5 (A) Advantages & disadvantages of SSF (10)

Q-6 (A) Describe Continuous sterilization of fermentation medium. (05)

(B) Explain determination of k_{La} values with the help of any one method in detail. (05)

OR

Q-6 (A) Explain sterilization of air. (05)

(B) Describe scale up of fermentation process. (05)

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 (2)