

(i) Printed Pages : 3

Roll No.

(ii) Questions : 9

Sub. Code :

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Exam. Code :

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B.Sc. (Hons.) Biotechnology 6th Semester

(2054)

BIOPROCESS ENGINEERING AND TECHNOLOGY

Paper : BIOT-602-T

Time Allowed : Three Hours]

[Maximum Marks : 67

Note :— Attempt **five** questions in all, Question No. 1 is compulsory.
Attempt **one** question from each Unit.

1. Explain the following :—

- (a) Significance of batch and continuous sterilization.
- (b) Absolute and depth filters.
- (c) Specific growth rate.
- (d) Yield Coefficient.
- (e) Function of spargers.
- (f) Online sensors in fermenters.
- (g) Biomass productivity.
- (h) Two enzymes used for cell disruption.
- (i) Whole broth processing.
- (j) Upstream and Downstream process.

1.5×10

UNIT—I

2. (a) What is Sterilization Cycle ? Differentiate between batch and continuous sterilization cycle.
- (b) Discuss the mechanism involved in filter sterilization.
- (c) Give diagrammatic representation of continuous sterilization process. 4,5,4
3. (a) Derive and explain correlation between temperature and time during moist heat killing of microorganisms.
- (b) What is filter sterilization ? What are mechanisms involved in filter sterilization of culture medium/air ? 8,5

UNIT—II

4. (a) Explain how biomass, substrate and primary metabolite formation varies during batch culture process.
- (b) Explain Metabolic productivity in continuous culture process. 9,4
5. Write short notes on the following :
- (a) Internal feed back system and its significance.
- (b) Effect of pH on growth and product formation. 8,5

UNIT—III

6. Draw well labelled diagram of fermenter and give functions of major components fermenter. 7,6
7. (a) What are control systems in fermenter ? Explain Two position control system.
- (b) Explain in detail pH probe used in fermenters. 6,7

UNIT—IV

8. (a) Discuss two methods for cell disruptions.
(b) What is aqueous two phase extraction system ? Give its significance. 8,5
9. Write short notes on the following :
(a) Supercritical extraction
(b) BOD and COD. 7,6