(i) Printed Pages : 3] Roll No. .....

(ii) Questions : 9] **Sub. Code :** 0 9 6 7

Exam. Code : 0 0 3 8

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

1047

BIOTECHNOLOGY

(Bioprocess Engineering and Technology)

Paper : BIOT–Sem-VI-II-T

Time : 3 Hours] **[Max. Marks : 67**

Note :– Attempt *five* questions in all, selecting *one* from Sections A, B, C and D. Question No. **1** is compulsory.

1. Compulsory questions :

   (a) What are depth filters ?

   (b) Why extracellular microbial products are preferred ?

   (c) What types of growth takes place in batch fermenters ?

   (d) What are supercritical solvents ?

   (e) What is the function of baffles in fermenters ?

(f) Name any *two* factors which affect the product formation critically ?

(g) Define specific growth.

(h) What is aspect ratio ? 2,2,2,2,2,2,2,1

Section–A

2. (a) Give an account of fundamental principles of biochemical engineering.

(b) Explain the methods of media sterilization. 6,7

3. Write notes on the following :

(a) Design of batch sterilization.

(b) Continuous sterilization process. 6½,6½

Section–B

4. (a) Define microbial growth kinetics. Describe it with reference to batch reactors.

(b) What type of internal and external feedback systems is required in bioreactors ? Explain. 6½,6½

5. (a) How simple kinetics of batch and continuous system are different from each other ?

(b) Write about the yields coefficient and doubling time. Which parameters affect both of these ? 6½,6½

Section–C

6. (a) Draw the structure of a fermenters or and discuss its main components.

   (b) How aseptic operations of the fementers are managed ? 7,6

7. Explain the following :

   (a) DO probes and their functions.

   (b) Spargers and their types. 6½,6½

Section–D

8. (a) How the downstream processing is done for Penicillin ?

   (b) Discuss the methods of cell disruption. 8,5

9. Describe the following :

   (a) Secondary waste water treatment.

   (b) Aqueous two phage extraction. 6½,6½