Roll No. | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 09

M.Sc. (BT) (2016 to 2017) (Sem.–2)

BIOPROCESS ENGINEERING AND TECHNOLOGY

Subject Code : MSBT-104

M.Code : 15011

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly/True/False :

a) What is Reynolds number?

b) What is overall heat transfer coefficient?

c) What is Del factor in context of sterilization?

d) Why is K_La important?

e) Viscosity of the medium affects power requirements of a bioreactor. Explain.

f) Write two advantages of fed-batch reactors.

g) Write Monod's Equation.

h) What do you mean by dissolve oxygen concentration?

i) What are the materials of construction of the fermentor?

j) Autoclave is also called high pressure steam sterilizer. (True / False)

SECTION-B

2. Describe the process of batch sterilization.

3. Write about bubble column reactor.

4. Explain Fourier law.

5. Explain Bernoulli's equation.

6. Write Centrifugation Theory.

SECTION-C

7. a) Describe how RTD studies can be used to predict conversion in a real reactor?

   b) Write a note on batch and CSTR.

8. Discuss the role of design of sparger and impeller, baffles, temperature and pressure on volumetric oxygen transfer coefficient (K_La).

9. Write notes on **any two** :

   a) HPLC.

   b) Filtration.

   c) Biosensors.

   d) TDT Curve.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.