Roll No.						Total No. of Pages: 0	2
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Total No. of Questions: 09

M.Sc. (BT) (2011 to 2017) (Sem.-2) BIOPROCESS ENGINEERING AND TECHNOLOGY

Subject Code: MSBT-104 M.Code: 15011

Time: 3 Hrs. Max. Marks: 60

INSTRUCTION TO CANDIDATES:

- 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

Q1. Describe briefly:

- a) Bioprocess
- b) Material balance Vs. energy balance
- c) Reynold number
- d) Bernoulli's equation
- e) Mass transfer
- f) F-value
- g) TDT curve
- h) Biosensor
- i) Reverse osmosis
- i) Ultrafiltration

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SECTION-B

- Q2. Describe briefly steps involved in the bioprocess development.
- Q3. What is heat transfer? Describe individual and overall heat transfer coefficient.
- Q4. What are fibrous filters? Describe the kinetics for the designing of fibrous filters for sterilization of air.
- Q5. Describe the oxygen requirements of a fermenter. Also highlight the factors affecting oxygen transfer rate.
- Q6. Describe the applications of bioprocess engineering in biotechnology industry.

SECTION-C

- Q7. What is liquid gas mass transfer? Describe the oxygen uptake in cell culture. Also highlight the factors affecting cellular oxygen demand.
- Q8. Describe the microbial growth kinetics of continuous system.
- Q9. Describe the physical, chemical and mechanical methods of cell disruption with merits and demerits in each case.

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.

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