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Paper Code: MTBT023

M. TECH
(SEMESTER I) ODD SEMESTER EXAMINATION 2016-17
INDUSTRIAL BIOTECHNOLOGICAL PRODUCTS

[Time: 3 hrs.] **[Max. Marks: 70]**

Note – Attempt all questions. All questions carry equal marks

1. Attempt any **FOUR** parts of the following:- **[3.5x4=14]**

   (a) What is defined culture medium? Discuss its advantages.
   (b) Which raw material you will use for producing ethanol by fermentation? Describe the process briefly.
   (c) Name two important microorganisms used for the production of biofertilizers and discuss the growth conditions for high density cultivation of the microbial cells.
   (d) Discuss the microbial feedback repression control system. How microbes can be modified into industrially important mutant. Explain using any one example
   (e) Describe the process of Yoghurt preparation.

2. Attempt any **FOUR** parts of the following:- **[3.5x4=14]**

   (a) Describe the process of ion exchange chromatographic purification of enzymes.
   (b) Elucidate the functioning of one vital equipment frequently used in food processing.
   (c) Give one potential example of enzyme biosensor and discuss its applications.
   (d) Describe the process of cheese production.
   (e) What are bioinsecticides? Give one suitable example and discuss its advantages.

3. Attempt any **TWO** parts of the following:- **[7x2=14]**

   (a) What is the raw material used for beer production? Describe the production process in detail.
   (b) Describe the industrial production of Citric Acid with the help of a labeled diagram.
   (c) Give a detailed account vinegar production at commercial scale.

4. Attempt any **TWO** parts of the following:- **[7x2=14]**

   (a) Describe briefly the statistical methods of process optimization.
   (b) Explain how oxygen mass transfer can be optimized in submerged fermentation.
   (c) Describe the process of Penicillin production at commercial scale.

5. Attempt any **TWO** parts of the following:- **[7x2=14]**

   (a) Discuss the salient characteristic features of solid state and submerged fermentation. Describe the design of any thee bioreactors used for solid state fermentation.
   (b) Discuss the biosynthesis and production of glutamine amino acid.
   (c) Give a detailed account of microbial production of bioplastic and biopolymers.