



(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 154601**

Roll No.

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## B. Tech.

(SEM. VI) THEORY EXAMINATION, 2014-15  
FERMENTATION BIOTECHNOLOGY

Time : 3 Hours]

[Total Marks : 100

**Note :** Attempt all questions. All question carry equal marks.

1. Attempt any four parts of the following : **5×4=20**
- (a) Which factors are considered during industrial media preparation?
  - (b) Enumerate the points of differences between primary and secondary metabolites.
  - (c) Discuss the submerged state fermentation of citric acid.
  - (d) Give the importance of fermentation in various industries.
  - (e) Discuss the stages in the chronological development of fermentation industry.
  - (f) Discuss dual fermentation with examples.

2. Attempt any four parts of the following : **5×4=20**
- (a) What is continuous sterilization?
  - (b) What considerations need to be taken while using nitrogen as a source of raw material in any nutrient medium?
  - (c) How is a continuous process different from a fed batch and batch process?
  - (d) Discuss the importance of medium optimization.
  - (e) Write short note on:
    - (i) Inducer
    - (ii) Precursor.
  - (f) Explain “wash-out” phenomenon. How can you prevent it?
3. Attempt any two parts of the following : **10×2=20**
- (a) What is catabolite repression? Why is its regulation important in microorganisms?
  - (b) Explain the substrate induction process for optimum production of enzymes.
  - (c) Glutamate production depends on the levels of biotin present in the media. Describe this statement in detail.
4. Attempt any two parts of the following : **10×2=20**
- (a) What are the importances of preservation of microorganisms in fermentation industries? Explain the techniques of cryopreservation and lyophilization in details with suitable examples.

- (b) Explain the procedure for the control of biosynthesis of arginine in *Cornybacterium glutamicum*.
  - (c) What are primary & secondary metabolites? Explain the different processes of overproduction of primary metabolites.
5. Attempt any two parts of the following : **10×2=20**
- (a) Discuss the strategic steps involved in genetic modification of *E.coli* through r-DNA technology. Explain in detail with suitable examples.
  - (b) Discuss the industrial production process of penicillin.
  - (c) What is feedback inhibition? Discuss various types of feedback inhibition with suitable examples.
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