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Total number of printed pages – 2

B. Tech  
PCBT 4307

**Sixth Semester Regular Examination – 2014**

**INDUSTRIAL MICROBIOLOGY AND ENZYME TECHNOLOGY**

**BRANCH : BIOTECH**

**QUESTION CODE : F 267**

**Full Marks – 70**

**Time : 3 Hours**

Answer Question No. 1 which is compulsory and any **five** from the rest.

The figures in the right-hand margin indicate marks.



1. Answer the following questions :

2×10

- Name four different kinds of bioreactors used for industrial production of antibiotics and aminoacids.
- Define solid state fermentation. What is its significance ?
- How Leloir pathway is advantageous for synthesis of oligosaccharides ?
- Define the term “de-controlled mutant” ? Why it is significant in commercial strain development ?
- Define the efficiency of microbial transformation. Deduce the mathematical expression for it.
- How the stability of lysozyme is increased ?
- Differentiate between feed back inhibition and feed back repression using flow diagram.
- What do you mean by diffusion coefficient of immobilized enzyme ? Why it is significant ?
- Why a lactose deficit mutant strain of bacteria may grow in medium supplemented with glucose ?
- How the protein engineering of protease play significant role in detergent industry ?

P.T.O.

2. What do you mean by enzyme stability ? Briefly explain the approaches of enzyme engineering increase the enzyme stability across temperature and pH. 3+7
3. (a) Describe the upstream process for alcohol production. 5  
 (b) Define Enzyme engineering. Draw the flow sheet for the production of recombinant Taq polymerase using r-DNA technology. 5
4. Differentiate between : 2.5 × 4
- (a) Enzymation and Fermentation  
 (b) Entrapment and Cross linking  
 (c) Membrane reactor and Column reactor  
 (d) Broad spectrum and Narrow spectrum antibiotics.
5. Briefly explain the application of biocatalysts in biotransformation involving following biochemical reactions : 5 × 2
- (a) Group transfer redox reaction  
 (b) Elimination of C-C, C-O and C-N bond by cleavage.
6. What do you mean by strain of bacteria ? Briefly explain the strategies used for development of commercially important strain with suitable examples. 2+8
7. Write notes on : 5 × 2
- (a) Site directed mutagenesis  
 (b) Purification of heterologous proteins.
8. (a) What is the significance of reaction environment for industrial production of various biomolecules ? Explain. 5  
 (b) Write short notes on 'kinetics of continuous culture' ? 5

