

Registration No. :

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Total number of printed pages – 2

B. Tech
PCBT 4307

Sixth Semester Examination – 2013

INDUSTRIAL MICROBIOLOGY AND ENZYME TECHNOLOGY

BRANCH : BIOTECH

QUESTION CODE : A209

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. Explain the following questions : 2×10
 - (a) Submerged culture method
 - (b) Secondary metabolites
 - (c) Auxotrophic mutant
 - (d) Lyophilization
 - (e) Batch fermentation
 - (f) Entrapment
 - (g) β -lactum ring
 - (h) Enzyme immobilization
 - (i) Microbial polysaccharides
 - (j) Intramolecular cross-linking.

2. (a) Briefly describe industrial methods for citric acid production. 5
(b) What is solid state fermentation ? Discuss its significance in large scale operation. 5

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3. (a) Michelis and Menten kinetics for enzyme reaction. 5
(b) Role of precursor and inducer in medium formulation. 5
4. (a) Discuss industrial production of ethanol from lignocellulosic biomass. 5
(b) Compare between the growth and product formation kinetics between continuous and fed batch fermentation. 5
5. Explain the type of immobilization, in detail, citing examples and write advantages and disadvantages of immobilized enzymes over native enzymes. 5+5
6. Write down media selection and development for industrial production. 10
7. Write down short note on any *two* of the following : 5×2
 - (a) Enzyme stabilization
 - (b) Application of enzyme in industry
 - (c) Site-directed mutagenesis in protein engineering.
8. Write short notes on any *two* of the following : 5×2
 - (a) Strain improvement
 - (b) Genetically engineered strain
 - (c) Stock culture.