

IV B.Tech. I Semester Regular Examinations, November -2005
METABOLIC ENGINEERING
(Bio-Technology)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Write short notes on:
 - (a) Passive diffusion
 - (b) Facilitated diffusion [16]
2. Describe in detail the primary screening involved in strain selection with example. [16]
3. Describe
 - (a) Differential regulation by ISO enzymes.
 - (b) Gene dosage. [16]
4. Explain mixed or sequential Bioconversions with suitable examples. [16]
5. Describe Induction / Repression phenomena in E.coli with examples. [16]
6. Describe Enzyme inhibition and factors involved in it. [16]
7. How does mutation effect the enzyme production? List out the factors involved in optimization of mutants for high yield protein production? [16]
8. Explain the Fermentation parameters involved in production of wine from yeast. [16]

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1. Write short notes on:
 - (a) Feed back repression
 - (b) CAMP [16]
2. Describe in detail the secondary screening involved in strain selection with example. [16]
3. Detail the regulation of Enzyme synthesis at Fermentor level. [16]
4. Define Bioconversion and describe in detail the conversion of insoluble substances by sequential bioconversion. [16]
5. Describe induction and Repression phenomena in yeast, citing Alcohol production as example. [16]
6. Describe in detail the various modes of diffusion? [16]
7. What is enzyme inhibition and detail the various modes of enzyme inhibition.[16]
8. Distinguish and differentiate concerted feed back regulation and cumulative feed back regulation with examples. [16]

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1. Write short notes on:
 - (a) Cometabolism during Bioconversion
 - (b) Feed back regulation. [16]
2. List out and describe the parameters involved in scale up of Fermentation (large scale) from pilot scale. [16]
3. What is bio conversion and what are the advantages of molecules generated by bio conversion to industry. [16]
4. Explain gene regulation by Jacob and Monad model citing lac operon as example. [16]
5. Evaluate catabolite regulation with tryptophan operon as example. [16]
6. Explain how gene dosage is evaluated and how does gene dosage effect Fermentation process. [16]
7. List out the biotechnological application of enzymes (eg:- Proteases, Amylases etc) Produced by Fermentation. [16]
8. Distinguish and differentiate concerted and cumulative feed back regulation with examples. [16]

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1. Write short notes on:
 - (a) Strain selection
 - (b) Isozymes. [16]
2. How can Metabolic pathways be genetically controlled with examples. [16]
3. What is Bioconversion and describe the factors involved in Bioconversion? [16]
4. Describe:
 - (a) Concerted feed back regulation
 - (b) Amino acid regulation. [16]
5. Describe the factors contributing to catalytic efficiency of an enzyme. [16]
6. Define Mutation and various modes of generating mutations in improving industrial biotechnology of an organism? [16]
7. Compare and contrast direct and indirect fermentations citing amino acid synthesis as example? [16]
8. Describe
 - (a) Precursor effects in biosynthesis of secondary metabolites.
 - (b) Producers of secondary metabolites. [16]
