Code No: 07A72312 **R07** **Set No. 2**

IV B.Tech I Semester Examinations,MAY 2011
METABOLIC ENGINEERING
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. What are recalcitrant xenobiotic compounds? Explain general features of biodegradation of xenobiotic compounds. [8+8]
2. What is metabolism? How anabolism and catabolism integrated. [16]
3. Explain various strategies to identify rate limiting step in a pathway. [16]
4. What is metabolic pathway modeling? Explain software tools used for metabolic pathway modeling. [16]
5. What are mutants? Explain methods for selective isolation of improved strains. [16]
6. Explain the metabolic pathway manipulations to improve the production of tryptophan. [16]
7. What is genetic design? Explain how nature has produced a vast diversity of polyketides. [16]
8. Explain biodegradation of BTX mixtures? Explain role of metabolic mixtures.[16]

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Code No: 07A72312 **R07** **Set No. 4**

IV B.Tech I Semester Examinations,MAY 2011
METABOLIC ENGINEERING
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain the metabolic regulation by regulation of enzyme concentration. [16]
2. What do you understand by feedback regulation? Explain this with special reference to amino acid biosynthetic pathways. [16]
3. Write a detailed note on:
   (a) Fed-batch Fermentation
   (b) Continuous fermentation. [8+8]
4. Briefly explain different types of pathway manipulations to improve fermentation. [16]
5. Explain various applications of metabolic engineering in pharmaceuticals. [16]
6. Write about various producers of secondary metabolites. [16]
7. How bioinformatics fortified metabolic engineering? [16]
8. Briefly explain two fundamentally different ways in which a cell might control the rate of an enzyme reaction. [16]

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Code No: 07A72312 **R07** **Set No. 1**

IV B.Tech I Semester Examinations,MAY 2011
METABOLIC ENGINEERING
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Briefly out line the procedure for selection of microorganism producing a compound. [16]
2. How can metabolic pathways genetically controlled explain with any two examples? [16]
3. Explain in detail different strategies that can be adopted for maximizing the yield of secondary metabolite. [16]
4. Role of bioinformatics in metabolic pathway modeling. [16]
5. Write short notes on:
   (a) Origin of capacity to degrade xenobiotics by microorganisms
   (b) Use of mixed microbial populations. [8+8]
6. Explain metabolic flux analysis of citric acid fermentation of Candida lipolytica proposed by Aiba and Matsuoka. [16]
7. Write short notes on:
   (a) aerobic biodegradation of pollutants
   (b) anarobic biodegradation of pollutants. [16]
8. Explain the metabolic pathway manipulations to improve the production of 1, 3 propanediol. [16]

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Code No: 07A72312 **R07** **Set No. 3**

IV B.Tech I Semester Examinations,MAY 2011
METABOLIC ENGINEERING
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain the amino acid synthesis pathways regulation at whole cell level. [16]
2. Role of metabolic engineering in lactose and whey utilization in dairy industry.[16]
3. What are the ideal characteristics of strains? Write about different approaches to improve the microbial strain. [16]
4. Write short notes on the following:
   (a) How specific rates and yields are related?
   (b) Explain the calculation of yields and specific rates. [8+8]
5. How the performance of the cell is achieved? Explain the methodology behind it. [16]
6. Briefly explain various methodologies and their applications in metabolic engineering. [16]
7. What are precursor effects? Briefly explain the regulation of secondary metabolic pathways. [16]
8. Explain briefly how radiolabel materials are utilized in experimental determination of metabolic flux. [16]

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