Code No: 07A42304 **R07** **Set No. 2**

II B.Tech II Semester Examinations,April/May 2012
BIOPROCESS ENGINEERING
Bio-Technology

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Write a note on overview of traditional and modern biotechnological process. [16]
2. Write short notes on the following:
   (a) Precursors and inducers in medium formulation
   (b) Structured growth model of microorganisms
   (c) Oxygen and Carbon dioxide exhaust gas analyzer. [5+5+6]
3. Describe how the microbial products can be classified along with the equations. [16]
4. Prove analytically that cell productivity in continuous reactor is more than that of batch reactor. [16]
5. In a mixed culture medium, there is a competition of two species for the same growth - limiting substrate. Two microorganisms A and B coexist and follow Monod kinetics. Under dynamic conditions, the substrate concentration (s) is given by
   $s = \frac{\mu_{mB} K_{SA} - \mu_{mA} K_{SB}}{\mu_{mA} - \mu_{mB}}$
   where μ and K_s are Monod parameters and have the following values.

	μm, h^{-1}	K_S, kg / m^3
Culture A	0.42	8.5
Culture B	0.38	7.6

   Calculate the dynamic substrate concentration. [16]
6. What are the applications of anaerobic fermentation processes in biotechnological industries? [16]
7. Explain in details with relevant equations the thermodynamics of microbial growth. [16]
8. Distinguish between on-line and off-line control of process parameters and explain them in detail with suitable examples. [16]

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Code No: 07A42304 **R07** **Set No. 4**

II B.Tech II Semester Examinations,April/May 2012
BIOPROCESS ENGINEERING
Bio-Technology

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Write a note on overview of traditional and modern biotechnological process. [16]

2. Describe how the microbial products can be classified along with the equations. [16]

3. In a mixed culture medium, there is a competition of two species for the same growth - limiting substrate. Two microorganisms A and B coexist and follow Monod kinetics. Under dynamic conditions, the substrate concentration (s) is given by
   $s = \frac{\mu_{mB}\ K_{SA} - \mu_{mA}\ K_{SB}}{\mu_{mA} - \mu_{mB}}$
   where μ and K_s are Monod parameters and have the following values.

	μm, h^{-1}	K_S, kg / m^3
Culture A	0.42	8.5
Culture B	0.38	7.6

   Calculate the dynamic substrate concentration. [16]

4. Explain in details with relevant equations the thermodynamics of microbial growth. [16]

5. What are the applications of anaerobic fermentation processes in biotechnological industries? [16]

6. Write short notes on the following:
   (a) Precursors and inducers in medium formulation
   (b) Structured growth model of microorganisms
   (c) Oxygen and Carbon dioxide exhaust gas analyzer. [5+5+6]

7. Distinguish between on-line and off-line control of process parameters and explain them in detail with suitable examples. [16]

8. Prove analytically that cell productivity in continuous reactor is more than that of batch reactor. [16]

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Code No: 07A42304 **R07** **Set No. 1**

II B.Tech II Semester Examinations,April/May 2012
BIOPROCESS ENGINEERING
Bio-Technology

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Distinguish between on-line and off-line control of process parameters and explain them in detail with suitable examples. [16]

2. Describe how the microbial products can be classified along with the equations. [16]

3. What are the applications of anaerobic fermentation processes in biotechnological industries? [16]

4. In a mixed culture medium, there is a competition of two species for the same growth - limiting substrate. Two microorganisms A and B coexist and follow Monod kinetics. Under dynamic conditions, the substrate concentration (s) is given by
   $s = \frac{\mu_{mB} K_{SA} - \mu_{mA} K_{SB}}{\mu_{mA} - \mu_{mB}}$
   where μ and K_s are Monod parameters and have the following values.

	μm, h^{-1}	K_S, kg / m^3
Culture A	0.42	8.5
Culture B	0.38	7.6

   Calculate the dynamic substrate concentration. [16]

5. Prove analytically that cell productivity in continuous reactor is more than that of batch reactor. [16]

6. Explain in details with relevant equations the thermodynamics of microbial growth. [16]

7. Write a note on overview of traditional and modern biotechnological process. [16]

8. Write short notes on the following:
   (a) Precursors and inducers in medium formulation
   (b) Structured growth model of microorganisms
   (c) Oxygen and Carbon dioxide exhaust gas analyzer. [5+5+6]

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Code No: 07A42304 **R07** **Set No. 3**

II B.Tech II Semester Examinations,April/May 2012
BIOPROCESS ENGINEERING
Bio-Technology

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Write short notes on the following:
   (a) Precursors and inducers in medium formulation
   (b) Structured growth model of microorganisms
   (c) Oxygen and Carbon dioxide exhaust gas analyzer. [5+5+6]

2. In a mixed culture medium, there is a competition of two species for the same growth - limiting substrate. Two microorganisms A and B coexist and follow Monod kinetics. Under dynamic conditions, the substrate concentration (s) is given by
   $s = \frac{\mu_{mB}\ K_{SA} - \mu_{mA}\ K_{SB}}{\mu_{mA} - \mu_{mB}}$
   where μ and K_s are Monod parameters and have the following values.

	μm, h^{-1}	K_S, kg / m^3
Culture A	0.42	8.5
Culture B	0.38	7.6

   Calculate the dynamic substrate concentration. [16]

3. What are the applications of anaerobic fermentation processes in biotechnological industries? [16]

4. Write a note on overview of traditional and modern biotechnological process. [16]

5. Describe how the microbial products can be classified along with the equations. [16]

6. Prove analytically that cell productivity in continuous reactor is more than that of batch reactor. [16]

7. Distinguish between on-line and off-line control of process parameters and explain them in detail with suitable examples. [16]

8. Explain in details with relevant equations the thermodynamics of microbial growth. [16]

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