Code.No: R05012305 | R05 | SET-1

I B.TECH – EXAMINATIONS, DECEMBER - 2010
PROCESS ENGINEERING PRINCIPLES
(BIO – TECHNOLOGY)

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

Answer any FIVE questions
All questions carry equal marks
- - -

1.a) How are biochemical reactions different from chemical reactions?
b) Briefly explain the steps in development of complete bioprocess for commercial manufacture of a new recombinant DNA derived product. [8+8]

2. By electrolyzing mixed brine, a mixture with the following percentage composition (by weight) is obtained at the cathode: Cl_2 = 67%, N_2 = 28% and O_2 = 5%. Using ideal gas law, calculate the following:
a) Composition of the gas by volume
b) Density of the mixture in kg/m^3 at 30^0C and 720 mmHg
c) Specific gravity of the gas mixture (air = 1.0). [5+5+6]

3. State law of conservation of energy and derive Bernoulli's equation for steady state one dimensional flow. [16]

4. Describe the concept of velocity profiles of a fluid in between two plates one is stationary and the other moving with a velocity 'u'. [16]

5. Define and explain in brief the following:
a) Mach number
b) Asterisk condition
c) Stagnant temperature.
And give the assumptions to represent the compressible flow in mathematical models. [16]

6. Derive Kozney-Carman equation. [16]

7. What are the different types of valves? Explain them in brief. [16]

8.a) Define and explain briefly volumetric efficiency?
b) Write the working procedure of peristaltic pump. [8+8]

--oOo--

Code.No: R05012305 | R05 | SET-2

I B.TECH – EXAMINATIONS, DECEMBER - 2010
PROCESS ENGINEERING PRINCIPLES
(BIO – TECHNOLOGY)

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

Answer any FIVE questions
All questions carry equal marks

\- - -

1. State law of conservation of energy and derive Bernoulli's equation for steady state one dimensional flow. [16]

2. Describe the concept of velocity profiles of a fluid in between two plates one is stationary and the other moving with a velocity 'u'. [16]

3. Define and explain in brief the following:
   a) Mach number
   b) Asterisk condition
   c) Stagnant temperature.
   And give the assumptions to represent the compressible flow in mathematical models. [16]

4. Derive Kozney-Carman equation. [16]

5. What are the different types of valves? Explain them in brief. [16]

6.a) Define and explain briefly volumetric efficiency?
   b) Write the working procedure of peristaltic pump. [8+8]

7.a) How are biochemical reactions different from chemical reactions?
   b) Briefly explain the steps in development of complete bioprocess for commercial manufacture of a new recombinant DNA derived product. [8+8]

8. By electrolyzing mixed brine, a mixture with the following percentage composition (by weight) is obtained at the cathode: Cl_2 = 67%, N_2 = 28% and O_2 = 5%. Using ideal gas law, calculate the following:
   a) Composition of the gas by volume
   b) Density of the mixture in kg/m^3 at 30^0C and 720 mmHg
   c) Specific gravity of the gas mixture (air = 1.0). [5+5+6]

--oOo--

Code.No: R05012305 | R05 | SET-3

I B.TECH – EXAMINATIONS, DECEMBER - 2010
PROCESS ENGINEERING PRINCIPLES
(BIO – TECHNOLOGY)

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

Answer any FIVE questions
All questions carry equal marks
- - -

1. Define and explain in brief the following:
   a) Mach number
   b) Asterisk condition
   c) Stagnant temperature.
   And give the assumptions to represent the compressible flow in mathematical models. [16]

2. Derive Kozney-Carman equation. [16]

3. What are the different types of valves? Explain them in brief. [16]

4.a) Define and explain briefly volumetric efficiency?
   b) Write the working procedure of peristaltic pump. [8+8]

5.a) How are biochemical reactions different from chemical reactions?
   b) Briefly explain the steps in development of complete bioprocess for commercial manufacture of a new recombinant DNA derived product. [8+8]

6. By electrolyzing mixed brine, a mixture with the following percentage composition (by weight) is obtained at the cathode: Cl_2 = 67%, N_2 = 28% and O_2 = 5%. Using ideal gas law, calculate the following:
   a) Composition of the gas by volume
   b) Density of the mixture in kg/m^3 at 30^0C and 720 mmHg
   c) Specific gravity of the gas mixture (air = 1.0). [5+5+6]

7. State law of conservation of energy and derive Bernoulli's equation for steady state one dimensional flow. [16]

8. Describe the concept of velocity profiles of a fluid in between two plates one is stationary and the other moving with a velocity 'u'. [16]

--oOo--

Code.No: R05012305 | R05 | SET-4

I B.TECH – EXAMINATIONS, DECEMBER - 2010
PROCESS ENGINEERING PRINCIPLES
(BIO – TECHNOLOGY)

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

Answer any FIVE questions
All questions carry equal marks
- - -

1. What are the different types of valves? Explain them in brief. [16]

2.a) Define and explain briefly volumetric efficiency?
b) Write the working procedure of peristaltic pump. [8+8]

3.a) How are biochemical reactions different from chemical reactions?
b) Briefly explain the steps in development of complete bioprocess for commercial manufacture of a new recombinant DNA derived product. [8+8]

4. By electrolyzing mixed brine, a mixture with the following percentage composition (by weight) is obtained at the cathode: Cl_2 = 67%, N_2 = 28% and O_2 = 5%. Using ideal gas law, calculate the following:
a) Composition of the gas by volume
b) Density of the mixture in kg/m^3 at 30^0C and 720 mmHg
c) Specific gravity of the gas mixture (air = 1.0). [5+5+6]

5. State law of conservation of energy and derive Bernoulli's equation for steady state one dimensional flow. [16]

6. Describe the concept of velocity profiles of a fluid in between two plates one is stationary and the other moving with a velocity 'u'. [16]

7. Define and explain in brief the following:
a) Mach number
b) Asterisk condition
c) Stagnant temperature.
And give the assumptions to represent the compressible flow in mathematical models. [16]

8. Derive Kozney-Carman equation. [16]

--oOo--