Code No: R05010803 **R05** **Set No. 2**

I B.Tech Examinations,December 2010
INTRODUCTION TO CHEMICAL ENGINEERING
Chemical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Energy associated with mass may be classified in a number of ways. What are they?
   (b) What are the different ways by which energy that is not associated with mass classified?
   (c) Define standard heat of reaction and discuss about heats of reaction at constant pressure and constant volume. [5+2+9]
2. Discuss in detail about the various types of adsorption equipment. [16]
3. (a) What are absorption and desorption processes? Explain with suitable examples.
   (b) Describe the essential features and operation of packed bed absorption column. [8+8]
4. (a) Write the physical significance of any four dimensional groups.
      i. Sherwood number
      ii. Schmidt number
      iii. Prandtl number
      iv. Mach number
      v. Froude number
      vi. Euler number
   (b) Explain the geometric, kinematic and dynamic similarities useful for a process. [8+8]
5. Discuss about the following terms for gas-liquid mass transfer operations: [16]
   (a) Weeping
   (b) Entrainment
   (c) Hold-up
   (d) Axial mixing.
6. (a) Define reflux ratio and explain how the reflux ratio will influence the number of trays in a distillation column.
   (b) Define 'q' line and explain how to locate the feed plate in distillation column with a suitable figure. [8+8]

7. (a) How are evaporators classified based on method of heating? Mention two types of evaporators.
   (b) Write about forced circulation type evaporator with a neat diagram. [6+10]

8. (a) Explain Newtons law of viscosity write about velocity gradient and rate of shear for a Newtonian fluid.
   (b) What are non-Newtonian fluids and explain the power law model for various types of fluids. [8+8]

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Code No: R05010803 **R05** **Set No. 4**

I B.Tech Examinations,December 2010
INTRODUCTION TO CHEMICAL ENGINEERING
Chemical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) How are evaporators classified based on method of heating? Mention two types of evaporators.
   (b) Write about forced circulation type evaporator with a neat diagram. [6+10]
2. Discuss about the following terms for gas-liquid mass transfer operations: [16]
   (a) Weeping
   (b) Entrainment
   (c) Hold-up
   (d) Axial mixing.
3. (a) Define reflux ratio and explain how the reflux ratio will influence the number of trays in a distillation column.
   (b) Define 'q' line and explain how to locate the feed plate in distillation column with a suitable figure. [8+8]
4. (a) Write the physical significance of any four dimensional groups.
      i. Sherwood number
      ii. Schmidt number
      iii. Prandtl number
      iv. Mach number
      v. Froude number
      vi. Euler number
   (b) Explain the geometric, kinematic and dynamic similarities useful for a process. [8+8]
5. (a) Energy associated with mass may be classified in a number of ways. What are they?
   (b) What are the different ways by which energy that is not associated with mass classified?
   (c) Define standard heat of reaction and discuss about heats of reaction at constant pressure and constant volume. [5+2+9]
6. Discuss in detail about the various types of adsorption equipment. [16]
7. (a) What are absorption and desorption processes? Explain with suitable examples.

(b) Describe the essential features and operation of packed bed absorption column. [8+8]

8. (a) Explain Newtons law of viscosity write about velocity gradient and rate of shear for a Newtonian fluid.

(b) What are non-Newtonian fluids and explain the power law model for various types of fluids. [8+8]

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Code No: R05010803 **R05** **Set No. 1**

I B.Tech Examinations,December 2010
INTRODUCTION TO CHEMICAL ENGINEERING
Chemical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Energy associated with mass may be classified in a number of ways. What are they?
   (b) What are the different ways by which energy that is not associated with mass classified?
   (c) Define standard heat of reaction and discuss about heats of reaction at constant pressure and constant volume. [5+2+9]

2. (a) Write the physical significance of any four dimensional groups.
      i. Sherwood number
      ii. Schmidt number
      iii. Prandtl number
      iv. Mach number
      v. Froude number
      vi. Euler number
   (b) Explain the geometric, kinematic and dynamic similarities useful for a process. [8+8]

3. (a) How are evaporators classified based on method of heating? Mention two types of evaporators.
   (b) Write about forced circulation type evaporator with a neat diagram. [6+10]

4. Discuss about the following terms for gas-liquid mass transfer operations: [16]
   (a) Weeping
   (b) Entrainment
   (c) Hold-up
   (d) Axial mixing.

5. (a) What are absorption and desorption processes? Explain with suitable examples.
   (b) Describe the essential features and operation of packed bed absorption column. [8+8]

6. (a) Explain Newtons law of viscosity write about velocity gradient and rate of shear for a Newtonian fluid.

(b) What are non-Newtonian fluids and explain the power law model for various types of fluids. [8+8]

7. (a) Define reflux ratio and explain how the reflux ratio will influence the number of trays in a distillation column.

(b) Define 'q' line and explain how to locate the feed plate in distillation column with a suitable figure. [8+8]

8. Discuss in detail about the various types of adsorption equipment. [16]

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Code No: R05010803 **R05** **Set No. 3**

I B.Tech Examinations,December 2010
INTRODUCTION TO CHEMICAL ENGINEERING
Chemical Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. Discuss about the following terms for gas-liquid mass transfer operations: [16]
   (a) Weeping
   (b) Entrainment
   (c) Hold-up
   (d) Axial mixing.
2. Discuss in detail about the various types of adsorption equipment. [16]
3. (a) What are absorption and desorption processes? Explain with suitable examples.
   (b) Describe the essential features and operation of packed bed absorption column. [8+8]
4. (a) Explain Newtons law of viscosity write about velocity gradient and rate of shear for a Newtonian fluid.
   (b) What are non-Newtonian fluids and explain the power law model for various types of fluids. [8+8]
5. (a) How are evaporators classified based on method of heating? Mention two types of evaporators.
   (b) Write about forced circulation type evaporator with a neat diagram. [6+10]
6. (a) Energy associated with mass may be classified in a number of ways. What are they?
   (b) What are the different ways by which energy that is not associated with mass classified?
   (c) Define standard heat of reaction and discuss about heats of reaction at constant pressure and constant volume. [5+2+9]
7. (a) Define reflux ratio and explain how the reflux ratio will influence the number of trays in a distillation column.
   (b) Define 'q' line and explain how to locate the feed plate in distillation column with a suitable figure. [8+8]
8. (a) Write the physical significance of any four dimensional groups.
      i. Sherwood number

ii. Schmidt number
iii. Prandtl number
iv. Mach number
v. Froude number
vi. Euler number

(b) Explain the geometric, kinematic and dynamic similarities useful for a process. [8+8]

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