Seat No.: _____ Enrolment No._____

(PE-4)

GUJARAT TECHNOLOGICAL UNIVERSITY

B.Pharm. Sem-I Examination December 08/January 09

Pharmaceutical Engineering (210004)

DATE: 26-12-2008, Friday TIME: 11.00 am to 2.00 p.m. MAX. MARKS: 80

Instructions:

1. ***Attempt any five questions.***
2. ***Make suitable assumptions wherever necessary.***
3. ***Figures to the right indicate full marks.***
4. ***All questions carry equal marks***

Q.1 **16**

(a) What is tie substance? Briefly explain the principle of material balance taking example of a tie substance.

(b) Write a note on limekiln performance.

(c) A moist paper containing 20% water by weight goes in a dryer in a continuous process. The paper leaves the drier containing 2% water by weight. Calculate the weight of water removed from the paper per 100 kg of the original moist paper. Calculate using the principle of material balance.

Q.2 **16**

(a) Write briefly on: (i) Reynolds number, and (ii) Types of pressures in pipe line.

(b) Describe total mechanical energy balance.

(c) With labeled diagram, describe principle and working of rotameter.

Q.3 **16**

(a) Give names of various devices used for movement of materials within the plant. Write in details with a diagram on conveyer belt.

(b) Describe in brief diagrams various pumps used for transportation of sterile liquids.

(c) Write a brief note on storage of liquids and gases in plant.

Q.4 **16**

(a) Describe Fourrier's law. Explain steady state condition.

(b) What is resistance to heat transfer? Explain clearly labeled diagram resistances in series and in parallel.

(c) What is film concept? Derive the equation to find out overall coefficient (U).

Q.5 **16**

(a) Describe factors affecting transfer of mass from solid to a fluid with diagrams.

(b) What is the influence of mass transfer on unit operation?

(c) Write a note on LMTD?

Q.6 **16**

(a) Describe the role of stainless steel and glass in a pharmaceutical plant.
(b) Write a note on prevention of corrosion in a pharmaceutical plant.
(c) Write a note on pneumatic conveyer.

Q.7 **16**

(a) Write a note on heat exchangers with diagrams.
(b) Describe the corollary to Daltan's and Amagat's law.
(c) Write a note on Fanning's equation.

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