

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 Fourier'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 Dalton's and Amagat's law.
 - (c) Write a note on Fanning's equation.
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