# GUJARAT TECHNOLOGICAL UNIVERSITY
### B. Pharm. – SEMESTER – I • EXAMINATION – SUMMER • 2014

**Subject Code: 210004**                    **Date: 18-06-2014**
**Subject Name: Pharmaceutical Engineering**
**Time: 02:30 pm - 05:30 pm**              **Total Marks: 80**
**Instructions:**
  1. **Attempt any five questions.**
  2. **Make suitable assumptions wherever necessary.**
  3. **Figures to the right indicate full marks.**

| | | | |
|---|---|---|---|
| **Q.1** | (a) | Define stoichiometry. Discuss its significance in pharmacy. | **06** |
| | (b) | Discuss Dimensional Analysis, its advantages and disadvantages. | **05** |
| | (c) | Write a brief note on material and energy balance. | **05** |
| **Q.2** | (a) | Discuss principle, construction, working, advantages and disadvantages of rotameter. | **06** |
| | (b) | Compare and contrast Venturimeter and orificemeter. | **05** |
| | (c) | What is friction? Enlist various types of friction looses and discuss any one of them. | **05** |
| **Q.3** | (a) | Define corrosion. Classify the types of corrosion. How will you prevent galvanic corrosion? | **06** |
| | (b) | Enlist the factors influencing the selection of materials for pharmaceutical plant construction. | **05** |
| | (c) | Discuss advantages and limitations of different kind of plastics used in pharmaceutical industry. | **05** |
| **Q.4** | (a) | Classify the transportation system for solids.Discuss belt conveyor. | **06** |
| | (b) | Write in detail a pump used for sterile product filling. | **05** |
| | (c) | Enumerate different types of valves. Describe gate valve. | **05** |
| **Q.5** | (a) | Write a Fourier's Law. Derive equation for rate of heat transfer when the resistances are in series. | **06** |
| | (b) | Write a short note on modes of heat transfers. | **05** |
| | (c) | Write a short note on black body and explain stephen boltzman law for black body. | **05** |
| **Q. 6** | (a) | What are the differences between pipes and tubing? | **06** |
| | (b) | Explain Dalton's Law and Amagat's Law. | **05** |
| | (c) | Classify heat exchangers and write any one in detail. | **05** |
| **Q.7** | (a) | Define and explain following:<br>(i) Unit operations (ii) Unit processes (iii) Tie-substance. | **06** |
| | (b) | A mercury manometer is connected across the venturimeter. The pressure on up stream side($P_1$) 0.4 kg/cm$^2$ gauge.The manometer reading is ($\Delta P$) is 70mm.Hg.Fluid flowing is water. Calculate the pressure at throat ($P_2$). Density of water is 1 gm/cm$^3$ and density of mercury is 13.6 gm/cm$^3$. | **05** |
| | (c) | Write a short note on solid/fluid mass transfer | **05** |

************** *************