Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**B. Pharm. – SEMESTER – III • EXAMINATION – SUMMER • 2014**

**Subject Code: 2230002 Date: 05-06-2014**

**Subject Name: Pharmaceutical Engineering**

**Time: 02:30 pm To 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 and explain following terms giving appropriate examples.<br>(1) Stoichiometry<br>(2) Unit operation<br>(3) Tie substance | **06** |
| | **(b)** | Explain overall Material Balance and Single component Material Balance. | **05** |
| | **(c)** | In a continuous process 100 Lb of wet air containing 0.02 Lb of water vapour per Lb of dry air enter per minute in a humidifier, where water vapour is added to the air. The leaving air contains 0.05 lb water vapour/Lb dry air. Calculate the ground of water added to the initial wet air per min. | **05** |
| **Q.2** | **(a)** | Write a short note : Steam as Heating media | **06** |
| | **(b)** | Derive an equation for overall heat transfer coefficient. What are the units of U in different systems? | **05** |
| | **(c)** | What is black body? Write a short note on Stefan- Boltzman's law. | **05** |
| **Q.3** | **(a)** | Classify the types of fluid flow and meters to measure the flow. | **06** |
| | **(b)** | Discuss the experiment of Rota meter. | **05** |
| | **(c)** | Differentiate Orifice meter and Venturimeter. | **05** |
| **Q.4** | **(a)** | Write a short note: Corrosion. | **06** |
| | **(b)** | Classify materials used for Pharmaceutical Plant construction. | **05** |
| | **(c)** | Briefly describe Glass as a material for pharmaceutical plant construction. | **05** |
| **Q.5** | **(a)** | Write a note on Transportation of fluids. | **06** |
| | **(b)** | Write a short note on Belt – Conveyer. | **05** |
| | **(c)** | Describe with diagram Centrifugal pump. | **05** |
| **Q. 6** | **(a)** | Explain briefly Bucket type steam trap. | **06** |
| | **(b)** | Give design and working of heat exchangers. | **05** |
| | **(c)** | Derive corollary of Dalton's law and Amagat's law. | **05** |
| **Q.7** | **(a)** | Write a short note on Types of Graphs. | **06** |
| | **(b)** | Describe the role of stainless steel in Pharm. Industry. | **05** |
| | **(c)** | Write a short note on Solid/ fluid mass transfer. | **05** |

**********