Seat No.: _____   *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY
B. Pharmacy Sem-I Examination January 2010

Subject code: 210004   **Subject Name: Pharmaceutical Engineering**
Date: 05 / 01 / 2010   **Time: 12.00 – 3.00 pm**
Instructions: **Total Marks: 80**

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

Q.1 (a) What is the principle of working of Rota meters? Give their general design and working. **06**
(b) Compare and contrast Orifice meter and Ventury meter. **05**
(c) What is Reynolds number? Show how it is dimensionless. What is its significance in fluid flow? **05**

Q.2 (a) Discuss various factors affecting selection of material of Pharmaceutical plant construction. **06**
(b) Define Corrosion. Discuss galvanic corrosion. **05**
(c) Discuss advantages and limitations of different kind of plastics used in Pharmaceutical industry. **05**

Q.3 (a) Discuss Dalton's law, Amagat's law and their corollary. **06**
(b) Discuss dimensional analysis, its advantages and disadvantages. **05**
(c) A salt solution originally contains 4% by weight NaCl in water is evaporated to 5% by weight NaCl. (NaCl is a tie substance.) (a) What percentage of water evaporated? (b) What is the reduction in original solution? **05**

Q.4 (a) What is thermal radiation? Explain the concept of Black body and Gray body in thermal radiation. **06**
(b) Why do we use steam as heating media in Pharmaceutical industry? **05**
(c) Classify steam traps. Describe balanced pressure expansion trap. **05**

Q.5 (a) What is a valve? What are its basic components? With a neat and clean diagram describe globe valve. **06**
(b) What are differences between Pipe and Tubings? **05**
(c) Describe Belt conveyer. **05**

Q. 6 (a) Discuss the principle involved in Mass transfer. Enumerate unit operations in which mass transfer operation is involved. **06**
(b) Define the following terms, (i) Absolute pressure (ii) Gauge pressure (iii) Calorie (iv) British thermal unit (v) Absolute Zero temperature. **05**
(c) Discuss the procedure of conversion of units. Express 1.80 gram/cubic cm as pound/gallon **05**

Q. 7 (a) What is a Manometer? Derive equation applicable for simple manometer. **06**
(b) Write Short Notes : (**Any Two**) **05**
(i) Arithmatic mean temperature and Logarithmic mean temperature
(ii) Different types of Graphs   (iii) Colour code for piping system
(c) A mercury manometer is connected across a ventury meter. The pressure on up stream - side (P_1) is 0.5 kg/cm^2 gauge. The manometer reading (ΔP) is 70mm.Hg. The fluid flowing is water. Calculate pressure at throat (P_2) **05**
Density Water – 1 gm/cm^3 Density Hg. – 13.6 gm/cm^3.
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