

GUJARAT TECHNOLOGICAL UNIVERSITY
B.Ph - SEMESTER-III • EXAMINATION – SUMMER 2013

Subject Code: 2230002**Date: 17/12/2013****Subject Name: Pharmaceutical Engineering****Time:****Total Marks: 80****Instructions:**

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

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| Q.1 | (a) Define: Unit operation and Unit process. What are significances of studying pharmaceutical engineering? | 06 |
| | (b) Write a note on heating value. | 05 |
| | (c) Discuss types of fluid flow. | 05 |
| Q.2 | (a) Write a note on gas laws with assumptions to be made. | 06 |
| | (b) Write a short note on different types of graphical representations. | 05 |
| | (c) Explain Bernoulli's theorem in detail. | 05 |
| Q.3 | (a) Write a detail note on combustion? | 06 |
| | (b) Discuss about different types of pressure and differential manometer used to measure the pressure. | 05 |
| | (c) Explain the terms dimension and units. | 05 |
| Q.4 | (a) Explain heat transfer by radiation including its fundamental concepts, rate of radiation and black body concept. | 06 |
| | (b) Explain Dalton's law. Enumerate the applications of gas laws. | 05 |
| | (c) Paper is passing continuously through a tunnel drier. The entering paper contains 10% water (dry basis, i.e. 10 Lb water/100 Lb dry paper) and the leaving paper contains 2% by weight water dry basis. Calculate how many pounds of water is evaporated per hour if 1000 Lb/hr of paper enters the drier. | 05 |
| Q.5 | (a) Write principle, working, construction and application of rotameter with its labeled diagram. | 06 |
| | (b) Differentiate between steady state and unsteady state. | 05 |
| | (c) Discuss reciprocating pump. Write down factors affecting selection of pumps. | 05 |
| Q.6 | (a) Classify heat exchange equipment. Discuss construction and working of single pass tubular heat exchanger. | 06 |
| | (b) Enumerate different types of interplant transportations. Which are the factors affecting selection of type of transportation. | 05 |
| | (c) Write a note on Fick's law of mass transfer. | 05 |
| Q.7 | (a) What are the factors to be considered in selection of material of plant construction with reference to glass? | 06 |
| | (b) Write a note on mass transfer coefficients. | 05 |
| | (c) Calculate the amount of heat flow through sheet of steel 10mm thick, 0.6M wide and 1m long in 30 minutes with a temperature of 70°C on one side and 30°C on other-side. | 05 |