

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-V Examination-Nov/Dec.-2011

Subject code: 150505

Date: 03/12/2011

Subject Name: Fundamentals of Chemical Engineering Unit Operations

Time: 2.30 pm -5.00 pm

Total marks: 70

Instructions:

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

Q.1 (a) Define fluid and discuss their types. Discuss in detail about Newtonian and Non-newtonian fluids. **07**

(b) List out the various types of pumps and explain working principle of Centrifugal pump. **07**

Q.2 (a) Explain construction and working principle of Rotameter. **07**

(b) Explain construction and working principle of Orifice meter. **07**

OR

(b) List out various types of valves and explain them in brief with their application. **07**

Q.3 (a) Discuss various mode of heat transfer with typical example. **07**

(b) Discuss in brief the general equations used for various types of heat transfer phenomena occurring in chemical industry. **07**

OR

Q.3 (a) Explain with a neat sketch construction and working of shell & tube heat exchanger. **07**

(b) Explain with a neat sketch the construction and working of agitated film evaporator. **07**

Q.4 (a) Explain construction and working of ball mill. **07**

(b) With a neat figure explain the construction and working of continuous Rotary vacuum filter. **07**

OR

Q.4 (a) With a neat figure explain the construction and working of fluid energy mill. **07**

(b) Explain construction and working of cyclone separator. **07**

Q.5 (a) Discuss in detail about steam distillation and compare it with vacuum distillation. **07**

(b) Define gas absorption and the criteria for choice of solvent for absorption. **07**

OR

Q.5 (a) Explain psychometric chart for air-water system and various terminology used. **07**

(b) Write short note on cooling towers. **07**
