

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- Vth SEMESTER-EXAMINATION – MAY/JUNE - 2012****Subject code: 150505****Date: 07/06/2012****Subject Name: Fundamentals of Chemical Engineering Unit Operations****Time: 02:30 pm – 05:00 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) How unit operations differ from unit processes? Discuss any four types of unit operations by giving their brief introduction. 07
- (b) Define fluid. Discuss about the Newtonian and Non Newtonian behavior of fluids with suitable examples. 07
- Q.2 (a) With a neat sketch explain the construction, working principle and industrial application of ball mill. 07
- (b) What are the advantages and disadvantages of Rotameter? Explain the working principle of Rotameter. 07

OR

- (b) (i) Explain the term Priming, Cavitations and NPSH 03
- (ii) How does a centrifugal pump differ from a reciprocating pump? 04
- Q.3 (a) Discuss about the open circuit and close circuit grinding. 07
- (b) Draw the neat sketch of 1-2 shell and tube heat exchanger and explain the function of each part. 07

OR

- Q.3 (a) Write a short note on “Gravity thickener”. (*A note preferably should include working principle, brief about construction, applications and related issues*) 07
- (b) Differentiate between Drop wise and Film wise condensation. 07
- Q.4 (a) Define Fourier’s law of heat conduction. Distinguish between Conduction, Convection and Radiation mode of heat transfer with suitable examples. 07
- (b) What are the different types of packing material used in packed tower? Differentiate between random and regular packing arrangement. 07

OR

- Q.4 (a) What is evaporation? Explain the working principle and industrial application of falling film type evaporator. 07
- (b) State the different types of cooling towers and discuss the working of any one of them in detail. 07

- Q.5 (a) Name the various types of distillation and schematically explain the working of any one of them. Cite any two industrial application of distillation. 07
- (b) Distinguish between gas absorption and stripping. Cite any five industrial applications of gas absorption operation. 07

OR

- Q.5 (a) Explain the working principle of a rotary drier. Cite any two industrial application of rotary drier. 07
- (b) What is liquid-liquid extraction? State the advantages and disadvantages of liquid-liquid extraction. 07
