

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BPHARM – SEMESTER I • EXAMINATION – WINTER • 2014

Subject code: 2210001

Date: 26-12-2014

Subject Name: Unit Operation - I

Time: 10:30 am - 01:30 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: Size reduction. Give objectives of size reduction. Explain the mechanisms of size reduction with a suitable diagram. **06**
- (b) Describe construction, working, advantages, limitations and uses of fluid energy mill. **05**
- (c) Describe ball mill with working principle. **05**
- Q.2** (a) Describe standards of sieve. How powders are classified according to size as per Indian Pharmacopeias? **06**
- (b) Describe Principle, construction and working of cyclone separator. **05**
- (c) Comment: (A. Turbine mixers are suitable for emulsification. **05**
(B. The thickness of screen influences size reduction by Hammer mill.
- Q.3** (a) Explain the terms: Positive Mixing, Negative Mixing and Neutral Mixing in details. **06**
- (b) Classify liquid mixers. Describe propeller mixers. **05**
- (c) Define crystallization. Discuss caking in crystals and its remedy. **05**
- Q.4** (a) Define : crystal. Describe the Miers' super saturation theory of crystallization. What are the limitations of the Miers' theory? **06**
- (b) Describe the theory of crystallization explaining each stage with a suitable diagram. **05**
- (c) Describe polymorphism and its significance. Explain importance of crystallization in pharmaceutical industry **05**
- Q.5** (a) Enumerate types of extraction processes. Describe the Soxhlet extractor in details. **06**
- (b) Define: Extraction. Explain in detail the theory of extraction **05**
- (c) Enlist mixers for semisolids. Describe triple –roller mill **05**
- Q. 6** (a) Describe automation for temperature control. **06**
- (b) Describe the elements for automated process control system. **05**
- (c) Write in brief about waste water treatment in pharmaceutical industry **05**
- Q.7** (a) Write brief note on fire extinguishers. **06**
- (b) Explain the construction and working of vaccum crystallizer. **05**
- (c) (A. Differentiate between sedimentation and elutriation **05**
(B. Explain hydrates and solvates
