Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. Pharm. – SEMESTER – I • EXAMINATION – SUMMER • 2015

Subject Code: 2210001 **Date: 25-05-2015**

Subject Name: Unit Operation-I

Time: 02:30 pm - 05:30 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)**	Discuss the objectives and importance of size reduction with examples.	**06**
	(b)	Explain particle size determination by sedimentation.	**05**
	(c)	Write a detailed note on solvents used for extraction.	**05**
Q.2	**(a)**	Discuss Swenson walker crystallizer with a labelled diagram.	**06**
	(b)	Discuss various mechanisms of size reduction with examples.	**05**
	(c)	Enlist various types of extraction processes and explain any one of them in detail.	**05**
Q.3	**(a)**	Explain in detail the mixer used for mixing semisolids.	**06**
	(b)	Explain in detail the working, advantages and disadvantages of cyclone separator.	**05**
	(c)	Discuss the theory of crystallization.	**05**
Q.4	**(a)**	Write a note on Mier's super saturation theory.	**06**
	(b)	Define 1. Mixing 2. Mixing index 3. Positive Mixing 4. Negative Mixing 5. Neutral mixing with examples.	**05**
	(c)	Explain construction, working, advantage and disadvantage of fluid energy mill.	**05**
Q.5	**(a)**	Describe various theories for energy requirement for size reduction.	**06**
	(b)	Discuss the pharmacopeial standards of sieves.	**05**
	(c)	Discuss the objective and principles of mixing with examples.	**05**
Q. 6	**(a)**	Write a note on supercritical fluid extraction.	**06**
	(b)	Discuss crystal habit and crystal shape.	**05**
	(c)	Write a note on automated process control system for temperature control.	**05**
Q.7	**(a)**	Discuss the objectives of crystallization and differentiate between crystallization and precipitation.	**06**
	(b)	Discuss the elements of automated process control systems.	**05**
	(c)	Discuss fire and safety hazards with respect to industrial hazard and safety precautions.	**05**

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