Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. Pharm. – SEMESTER – I • EXAMINATION – WINTER 2013

Subject Code: 2210001 Date: 30-12-2013

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)	Comment on the following (2 marks each): 1) The thickness of screen in hammer mill affects the product particle size. 2) Fluid energy mill is used for size reduction of thermolabile drugs. 3) Ball mill can be used for size reduction of semi-solids.	**06**
	(b)	With a neat sketch explain the construction and working of ball mill.	**05**
	(c)	Give the advantages, disadvantages and applications of colloid mill.	**05**
Q.2	(a)	Enumerate factors affecting crystallization. Explain supersaturation in detail.	**06**
	(b)	Give the principle of colloid mill. Explain energy requirements for size reduction.	**05**
	(c)	Explain the importance of size reduction in the pharmaceutical industry.	**05**
Q.3	(a)	Write a note on Swenson Walker crystallizer with a neat diagram.	**06**
	(b)	Write a note on spherical crystallization.	**05**
	(c)	With a neat diagram explain the advantages and disadvantages of double cone mixer.	**05**
Q.4	(a)	Enumerate methods for determination of particle size. Write a note on Sieve shaker.	**06**
	(b)	How will you separate a mixture of particles of different sizes using cyclone separator? Give 3 examples of equipments of size separation and principle of separation.	**05**
	(c)	Define sedimentation. Explain Stoke's law for calculation of particle size based on sedimentation.	**05**
Q.5	(a)	Write a note on mechanism and theory of mixing.	**06**
	(b)	Give examples of high shear and low shear mixers. Explain degree of mixing.	**05**
	(c)	Write a note on planetary mixer.	**05**
Q. 6	(a)	Enumerate solvents used for extraction. Water is a universal solvent.- Explain in detail.	**06**
	(b)	Describe the construction and working of an equipment used for liquid-liquid extraction.	**05**
	(c)	Describe applications of extraction in the pharmaceutical industry.	**05**
Q.7	(a)	Explain the importance of measurement of temperature in the pharmaceutical industry. Describe devices available for measurement of temperature.	**06**
	(b)	Explain feed back control and feed forward control mechanism.	**05**
	(c)	Describe the causes and prevention of chemical hazards.	**05**

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