

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.

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| Q.1 | (a) | Comment on the following (2 marks each): | 06 |
| | | 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. | |
| | (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 |
