

**GUJARAT TECHNOLOGICAL UNIVERSITY****B.Ph SEM-III Examination- Dec.-2011****Subject code: 230002****Date: 14/12/2011****Subject Name: Pharmaceutical Engineering II****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) What are the techniques to improve the powder flow? **06**  
Discuss the factors influencing granule flow in hopper and compression machine
- (b) Define angle of repose. Discuss various methods to measure it. **05**
- (c) Give Hausner ratio and Carr's compressibility index with its pharmacopoeial specifications **05**
- Q.2** (a) What is the difference amongst pellet, granule and particle/sphere? Differentiate cold and melt extrusion. **06**
- (b) Give the excipients used in extrusion technique and discuss about its properties. **05**
- (c) Write a note on force feed extruder. **05**
- Q.3** (a) Explain the factors affecting pelletization and pellet properties. **06**
- (b) What is the use of MCC in pelletization? **05**
- (c) Discuss the different shapes of pellets and explain the equipment with neat labeled diagram **05**
- Q.4** (a) Define 'content uniformity'. What is its importance in dosage form quality. **06**
- (b) Write a note on sampling techniques for content uniformity. **05**
- (c) Differentiate as per IP 2007 for weight variation and content uniformity requirement in various dosage forms. **05**
- Q.5** (a) What is control chart? How to establish limits of it? What is its application in Pharmacy? **06**
- (b) In a QC department, 1.0 L batch size of tablet for 100mg average weight was sampled. What is sample size? What is the limit of weight variation? What are 3  $\sigma$  limits for this? **05**
- (c) Enlist control charts for attribute and Explain 'C'- chart **05**
- Q.6** (a) Differentiate solid solutions/ solid dispersion and inclusion complex with suitable example and its utility. **06**
- (b) Give the significance of SCF in particle engineering and explain GAS process. **05**
- (c) Explain the application of SCF in extraction process **05**
- Q.7** (a) "Requirements of content uniformity varies from pharmacopoeia to pharmacopoeia and depends on country to country regulatory authorities and from dosage form to dosage form"- Justify and explain giving suitable examples **06**
- (b) Powder flow and compressibility are interdependent parameters – Establish or counter giving suitable arguments. **05**
- (c) Lactose granules are compressed and evaluated for following data. Comment on your results. **05**  
Sample: 100gms;  
Bulk volume: 75cc; Tapped volume: 53cc  
Heap diameter: 15cm; Heap height: 2.5cm  
Calculate required data.

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