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## GUJARAT TECHNOLOGICAL UNIVERSITY

## B. Pharm. - SEMESTER - III • EXAMINATION - WINTER • 2014

## Subject Code: 230002 <br> Date: 20-12-2014

## Subject Name: Pharmaceutical Engineering - II

Time: 10:30 am - 01:30 pm
Instructions:

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
Q. 1 (a) What is importance of powder flow? Discuss factors influencing powder flow. 06
(b) Enlist methods of powder flow determination. Discuss any two in detail. 05
(c) Granules of lactose were prepared by wet granulation and were evaluated for compressibility and flowability. Observations for 20 g granules are as follows:
Bulk Volume: 46 ml
Height of Pile: 6 cm Calculate Carr's Index, Hausner's ratio and Angle of repose. Give your comments.
Q. 2 (a) Compare and contrast: Powder, Granules and Pellets. 06
(b) Enlist methods of extrusion. Write a note on Hot Melt Extrusion.
(c) Write a brief note on Extrusion aids.

Tapped Volume: 38ml
Diameter of pile: 15.5 cm
Q. 3 (a) Give your comments on following
i) Supercritical fluids can behave as gas well as liquid.
ii) Powders having spherical shape show poor flowability.
iii) XmR charts are having " $n-1$ " values of Range.
(b) Discuss means to achieve uniformity of dosage.
(c) Discuss factors affecting pellet properties. 05
Q. 4 (a) How supercritical fluids can be used to obtain "Nanoparticles"? Discuss RESS in $\mathbf{0 6}$ detail.
(b) Enlist applications of SCFs. Discuss their application in extraction in detail.
(c) Write a note on GAS and SEDS (Solution enhanced dispersion by SCFs). 05
Q. 5 (a) What are control charts? Discuss different elements of control charts. 06
(b) Enlist types of control charts. Discuss application of control charts in pharmacy.
(c) A group of workers collected following data for hardness (in kgf) of tablets,

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | 159.

Plot control Chart for the data. $\left(\mathrm{A}_{2}=0.483, \mathrm{D}_{4}=2.004\right)$
Q. 6 (a) What is uniformity of Dosage? What are requirements for uniformity of content ..... 06 of tablets as per IP?
(b) Compare and contrast: Uniformity of dosage as per IP and USP.05(c) Diazepam Tablets IP were evaluated for uniformity of content. Contents (mg) 05obtained are 9.1, 9.4, 11.3, 9.1, 9.6, 10.4, 10.2, 9.3, 9.5 and 10.1. Give yourcomment on uniformity of content.
Q. 7 (a) Write a brief note on sampling techniques. How sampling affects results of ..... 06uniformity of content?
(b) Discuss techniques to improve powder flow. ..... 05
(c) Give your comments on following. ..... 05
i) Solubilization capacity of SCFs can be tailor made.
ii) SCFs can be converted to gas by decreasing pressure and can be converted to liquids by increasing pressure.

