

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B.Ph. - SEM-IV • EXAMINATION – SUMMER -2022**

**Subject Code: BP403TP****Date: 18/07/2022****Subject Name: Physical Pharmaceutics II****Time: 10:30AM TO 1:30PM****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) Differentiate molecular dispersion and colloidal dispersion with example. **06**  
(b) Describe any two kinetic properties of colloids. **05**  
(c) Describe the Kawakita and Heckel equations with respect to powder compression. **05**
- Q.2** (a) With the help of a diagram discuss the principle and working of a Searle type of cup and bob viscometer. **06**  
(b) Write a note on measurement of thixotropic coefficient. **05**  
(c) With respect to Rheology describe how aqueous hydroxy propyl methyl system would behave under stress. **05**
- Q.3** (a) Briefly discuss the theory of sedimentation in settling of suspension. **06**  
(b) Give a brief account on theories of emulsification. **05**  
(c) Explain identification test for emulsion. **05**
- Q.4** (a) Describe suitable method for particle volume measurement. **06**  
(b) What is specific surface. Calculate specific surface for a spherical particle. **05**  
(c) Discuss the derived properties of powder. **05**
- Q.5** (a) What is meant by controlled flocculation? Discuss the various means by which controlled flocculation can be achieved? **06**  
(b) Explain accelerated stability testing in expiration dating of pharmaceutical dosage forms. **05**  
(c) Discuss any one method for determining true density and bulk density. **05**
- Q. 6** (a) Explain zero order and pseudo zero order reaction with examples and suitable applications. **06**  
(b) A solution of a drug contained 500 units/ml when prepared. It was analyzed after 40 days and was found to contain 300 units/ml. Assuming it a first order reaction, find out half life and shelf life of the solution. **05**  
(c) Discuss the various means of stabilization of product which is sensitive to oxidation. **05**
- Q.7** (a) A plastic material was found to have a yield value of 5200 dyne/cm<sup>2</sup>. At shearing stresses above the yield value, shearing stress and rate of shear were linearly proportional. If rate of shear is 150 sec<sup>-1</sup> when shearing stress was 8000dyne/cm<sup>2</sup>, calculate the mobility of the system. **06**

- (b) Compute the sedimentation volume and degree of flocculation of a 5% w/v suspension of magnesium carbonate in water. The initial volume is 100 ml and final volume of sediment is 30 ml, the deflocculated sedimentation volume is 0.23. **05**
- (c) A sample of powdered zinc oxide, density  $5.60 \text{ g/cm}^3$ , is allowed to settle under the gravitational force,  $981 \text{ cm/sec}^2$ , at  $25^\circ\text{C}$ . The rate of settling is calculated to be  $7.30 \times 10^{-3} \text{ cm/sec}$ ; the density of the medium is  $1.01 \text{ gm/cm}^3$  and viscosity is given as 0.01 poise. Calculate the appropriate diameter of zinc oxide powder. **05**

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