

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY****B. Pharmacy Sem-III Examination December 2009****Subject code: 230001****Subject Name: Physical Pharmaceutics II****Date: 15 / 12 / 2009****Time: 12.00- 3.00pm****Instructions:****Total Marks: 80**

1. Attempt **any five** questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1**
- (a) Enlist different methods to determine Molecular weight of non electrolytes solutions. Explain any one method in detail. **06**
- (b) State Raoult's law. Explain in details about positive and negative deviations from Raoult's law. **05**
- (c) Define Molality and Normality. What are colligative properties? State the Henry's law. **05**
- Q.2**
- (a) Explain the theory of strong electrolytes. **06**
- (b) Define electric current. Explain electrolysis in an electrolytic cell. **05**
- (c) Describe the Arrhenius's theory of electrolytic dissociation. **05**
- Q.3**
- (a) Derive the equation for the second order of reaction ( $a = b$  and  $a \neq b$ ). **06**
- (b) Enlist different factors affect the rate of reaction. Discuss in details the effect of temperature on it. **05**
- (c) Write a short note on Accelerated stability study. **05**
- Q.4**
- (a) Derive the equation for protein binding to draw *Scatchard plot* with its limitations. **06**
- (b) Write a short note on chelates and polymer complexes. **05**
- (c) What are different methods to determine the order of a reaction? Discuss the half life method in detail. **05**
- Q.5**
- (a) Elaborate the different applications of polymers in pharmaceutical field. **06**
- (b) How to characterize polymers? Explain with different methods. **05**
- (c) Enlist any two synthetic polymers. Discuss any two general properties of polymer solutions. **05**
- Q. 6**
- (a) Explain in details "Noyes-Whitney" equation for dissolution. **06**
- (b) What is flux? Explain Fick's first law of diffusion. **05**
- (c) What is dissolution? Explain dissolution apparatus as per USP method I. **05**
- Q.7**
- (a) Comment on **06**
- i) Expiry date and shelf life is same.
  - ii) Dissolution rate is increased with increase the rate of stirring.
  - iii) Diffusion across the membrane depends on concentration of drug.
- (b)  $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}$  **05**  
The initial concentrations of both the substances in the mixture = 0.02 M.  
The change in concentration of alkali during 20 min. = 0.000283 mole/liter.  
Calculate  
i) Rate constant and ii)  $t_{1/2}$  of the reaction.
- (c) Write a short note on Diffusion Cells. **05**

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