Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**B. PHARM. - SEMESTER – III • EXAMINATION – WINTER 2012**

**Subject code: 230001 Date: 26/12/2012**

**Subject Name: Physical Pharmaceutics-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.**

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|---|---|---|---|
| **Q.1** | (a) | Describe Rault's law for Ideal solution and explain in brief 'True', 'Ideal' and 'Real' solutions giving examples. | **06** |
| | (b) | Discuss the colligative properties of substance in brief. | **05** |
| | (c) | The vapor pressure of pure propellant 11 (Mol. wt. 137.4) at 21°C is $p_{11}$°=13.4 psi and that of propellant 12 (Mol. wt. 120.9) is $p_{12}$°=84.9 psi. A 50:50 mixture by gram weight of the two propellants consists of 0.364 mole of propellant 11 and 0.414 mole of propellant 12. What is the partial pressure of propellant 11 and 12 in the 50:50 mixture, and what is the total pressure of this mixture? | **05** |
| **Q.2** | (a) | Discuss Arrhenius theory of electrolytic dissociation. | **06** |
| | (b) | Describe the properties of solutions of electrolytes in brief. | **05** |
| | (c) | The measured conductance of a 0.1N solution of a drug is 0.0563 ohm at 25°C.The cell constant at 25°C is 0.520 per cm. Calculate the specific conductance and equivalent conductance of the solution at this concentration. | **05** |
| **Q.3** | (a) | Enumerate the factors affecting the reaction rates and discuss the influence of temperature in brief. | **06** |
| | (b) | Explain on: Rates and orders of reactions. | **05** |
| | (c) | 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 the decomposition is first-order, at what time will the drug have decomposed to one-half of its original concentration? | **05** |
| **Q.4** | (a) | What is accelerated stability analysis? Describe ICH guidelines for stability study. | **06** |
| | (b) | Write the integrated rate equation and half-life equation for zero, first, second and third order of reaction. | **05** |
| | (c) | Enumerate the processes of decomposition of pharmaceutical products and discuss any one with its stabilization method. | **05** |
| **Q.5** | (a) | Classify various types of complexes. Enumerate the applications of complexes in pharmacy. | **06** |
| | (b) | Write a note on: Protein binding with reference to complexation. | **05** |
| | (c) | What are 'Chelates'? | **05** |
| **Q. 6** | (a) | Describe the pharmaceutical applications of polymers**.** | **06** |
| | (b) | Discuss the general properties of polymer solutions. | **05** |
| | (c) | Write a note on: Characterization of polymers. | **05** |
| **Q.7** | (a) | Write in brief on release of drug from various types of dosage forms. | **06** |
| | (b) | State Fick`s first and second law of diffusion. Discuss their applications. | **05** |
| | (c) | Write a note on: Zero-order drug release. | **05** |

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