

GUJARAT TECHNOLOGICAL UNIVERSITY

B. Pharm. – SEMESTER II • EXAMINATION – WINTER 2015

Subject Code: 220003

Date: 15/12/2015

Subject Name: Pharmaceutical Chemistry-II

Time: 2.30 pm to 5.30 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) | What is surface tension? Discuss different techniques to determine surface tension. | 06 |
| | (b) | Write note on Dipole moment. | 05 |
| | (c) | (i) What is half life? Show that half life of first order reaction is independent of concentration. | 03 |
| | | (ii) Compound A decomposes to B and the reaction is first order. The rate constant for the reaction is 0.5 s^{-1} . What is the half life of compound A? | 02 |
| Q.2 | (a) | Explain molecularity of a reaction and order of a reaction. Derive equation for rate constant of first order reaction. | 06 |
| | (b) | Explain following terms: (i) Viscosity (ii) Parachor (iii) Molar refraction (iv) autocatalytic reaction (v) Heterogenous catalysis | 05 |
| | (c) | What are different types of catalysis? Discuss characteristics of catalytic reactions. | 05 |
| Q.3 | (a) | Discuss different methods to determine order of a reaction. | 06 |
| | (b) | Write note on Enzyme catalysis and acid-base catalysis. | 05 |
| | (c) | Explain in detail enthalpy of the system & molar heat capacity. | 05 |
| Q.4 | (a) | Discuss the assumption of Langmuir adsorption isotherm and derive the equation. | 06 |
| | (b) | What is physical adsorption and Chemisorption? Discuss difference between both. | 05 |
| | (c) | Write note on Jablonski diagram. | 05 |
| Q.5 | (a) | Define quantum yield of photochemical reaction. Explain why high and low quantum yield results in a photochemical reaction. | 06 |
| | (b) | Define thermodynamics. Explain first law of thermodynamics. | 05 |
| | (c) | Explain Einstein's law of photochemical equivalence | 05 |
| Q. 6 | (a) | Discuss different types of radiation with its properties. | 06 |
| | (b) | What are colligative properties? Discuss different methods to determine depression of freezing point. | 05 |
| | (c) | What is Phase rule? Discuss water system with reference to phase rule. | 05 |
| Q.7 | (a) | Explain Raoult's law, Ideal solution and Real solution. Derive equation for Raoult's law. | 06 |
| | (b) | Write note on Henry's law and its limitations. | 05 |
| | (c) | Derive Kirchoff's equation. | 05 |
