

GUJARAT TECHNOLOGICAL UNIVERSITY**BPHARM – SEMESTER I • EXAMINATION – SUMMER - 2013****Subject code: 2220002****Date: 31-05-2013****Subject Name: Pharmaceutical Chemistry-II****Time: 02:30 pm to 05:30 pm****Total Marks: 70****Instructions:**

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

- Q.1** (a) Justify following sentences. **06**
1. Finely powdered substance is more effective adsorbent.
2. High molecularity reactions are very rare.
3. Upon addition of non-electrolyte substance, boiling point is elevated.
- (b) Explain important characteristics of enzyme catalysis. **05**
(c) Explain order of reaction and pseudo order of reaction. Derive integrated rate equation for first order reaction. **05**
- Q.2** (a) Explain various methods to determine the order of a reaction. **06**
(b) Define half-life of a reaction. Prove that half-life of first order reaction is independent of the initial concentration. **05**
(c) 50% of a first order reaction is completed in 100 seconds. How long will it take for the reaction to be completed 75%? **05**
- Q.3** (a) Derive Langmuir adsorption isotherm equation. Discuss behavior of Langmuir adsorption isotherm at very low and very high pressure. **06**
(b) Define adsorption and absorption. Differentiate: Physical adsorption and Chemical adsorption. **05**
(c) Explain: Fluorescence, Phosphorescence and Chemiluminescence. **05**
- Q.4** (a) What is meant by freezing point depression? Derive equation to determine the molecular weight from depression of freezing point. **06**
(b) State and explain Henry's law. **05**
(c) Define specific conductance and equivalent conductance. Write a note on Debye-Huckel Theory. **05**
- Q.5** (a) Explain the term Surface tension. What is the effect of temperature on surface tension of a liquid? Discuss drop weight method to determine surface tension of a liquid. **06**
(b) Define viscosity. Write units used to express viscosity. Discuss pharmaceutical applications of viscosity. **05**
(c) Write a note on Optical rotation. **05**
- Q. 6** (a) Explain following terms. (Any three) **06**
1. Joule-Thomson Effect
2. Entropy
3. Molar Heat Capacity
4. Enthalpy
- (b) Define C_p and C_v . State their relation. **05**
(c) Write a note on 'The Carnot Cycle'. **05**
- Q.7** (a) Define following terms. **06**
1. Activation energy

2. Quantum yield
3. Refractive Index
4. Partition co-efficient
5. Colligative property
6. Adiabatic process

(b) State and explain Beer-Lambert's Law for photochemical reaction. **05**

(c) The heat of combustion of ethylene at constant volume and at 17°C is - 332.19 kJ. Calculate its heat of combustion at constant pressure considering water to be in liquid state. (R = 2 cal degree⁻¹ mol⁻¹) **05**

