Seat No.: _____ Enrolment No._____

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. 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.	**06**
	(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) 1. Joule-Thomson Effect 2. Entropy 3. Molar Heat Capacity 4. Enthalpy	**06**
	(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. 1. Activation energy	**06**

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 17^0C is -332.19 kcals. Calculate its heat of combustion at constant pressure considering water to be in liquid state. (R= 2 cal $degree^{-1}$ mol^{-1}) **05**

$C_2H_{4\,(g)} + 3O_{2\,(g)} \longrightarrow 2CO_{2\,(g)} + 2H_2O\,(l)$

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