GUJARAT TECHNOLOGICAL UNIVERSITY

B. Pharmacy Sem-II Examination June 2010

Subject code: 220003　　　　　　　　　Subject Name: Pharm Chemistry-II

Date:　17 / 06 / 2010　　　　　　　　　 Time: 02.30 pm – 05.30 pm

　　　　　　　　　　　　　　　　　　　 Total Marks: 80

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

Q.1

(a)	Define the term 'Viscosity Coefficient'. Describe Ostwald's viscometer method for determining it.	05
(b)	Define: Parachor. Explain its applications in elucidating structure.	07
(c)	Define: Molar Refraction. Describe Abbe Refractometer.	04

Q.2

(a)	State and explain Henry's Law. Enlist its limitations.	06
(b)	Derive a relation for the depression of freezing point of a solution with its molality.	04
(c)	What is conductance ? Discuss Debye-Huckel theory.	06

Q.3

(a)	State first law of thermodynamics. Derive the equation $C_p - C_v = R$	04
(b)	Write a note on 'The Carnot Cycle'.	05
(c)	Explain phase rule with the meaning of the terms involved in it.	05
(d)	Explain the following: 1) Entropy　　　　2) Joule-Thomson effect	02

Q.4

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(a)	What is an adsorption isotherm ? Discuss, in detail, Langmuir adsorption isotherm.	07
(b)	Differentiate between physical adsorption and chemisorption.	03
(c)	Explain the any four characteristics of enzyme catalysis.	06

Q.5

(a)	State & explain Lambert- Beer law of Photochemistry.	04
(b)	Define Quantum efficiency. Discuss causes of high quantum yield with suitable examples.	05
(c)	Explain Jablonski diagram.	04
(d)	Explain the following: 1) Fluorescence　　　2) Phosphorescence　　　3) Thermopile	03

Q. 6

(a) Enlist various methods for determination of order of reaction. Discuss any two methods. **08**

(b) The reaction between methane and diatomic sulphur is given by the following equation: **04**

$CH_{4(g)}$ + $2S_{2(g)}$ → $CS_{2(g)}$
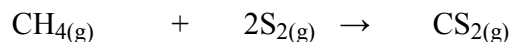
The rate constant for this reaction at 550 C and 625 C temperatures is 1.1 lit.mol^{-1} and 6.4 lit.mol^{-1} respectively. Calculate E_a for the reaction. (R = 8.3145 J. K^{-1} . mol^{-1})

(c) What is order of reaction ? Derive integrated rate equation for first order reaction. **04**

Q.7

(a) Define: Radioactivity. Enlist methods for measurement of radioactivity. Discuss any one in detail. **07**

(b) Compare properties of α, β, and γ radiations. **03**

(c) The heat of combustion of ethanol is -330.0 kcal. If the heat of formation of $CO_{2(g)}$ and $H_2O_{(l)}$ be -94.3 kcal and -68.5 kcal respectively, calculate the heat of formation of ethanol. **04**

(d) Why are high molecularity reactions rare ? – Explain. **02**

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