

# GUJARAT TECHNOLOGICAL UNIVERSITY

B. Pharmacy Sem-II Examination June 2010

Subject code: 220003

Date: 17 / 06 / 2010

Subject Name: Pharm Chemistry-II

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: **02**  
1) Entropy                      2) Joule-Thomson effect

**Q.4**

- (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**

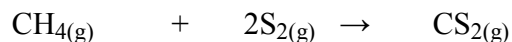
**Q.5**

- (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: **03**  
1) Fluorescence              2) Phosphorescence              3) Thermopile

**Q. 6**

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

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



The rate constant for this reaction at 550 C and 625 C temperatures is 1.1 lit.mol<sup>-1</sup> and 6.4 lit.mol<sup>-1</sup> respectively. Calculate E<sub>a</sub> for the reaction. ( R = 8.3145 J. K<sup>-1</sup> . mol<sup>-1</sup> )

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

**Q.7**

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

(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 **04**  
formation of CO<sub>2</sub>(g) and H<sub>2</sub>O (l) be -94.3 kcal and -68.5 kcal respectively, calculate the heat of formation of ethanol.

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

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