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**B.E / B.Tech. (Full Time) DEGREE EXAMINATIONS, April / May 2011**

**I SEMESTER**

**(Common to all branches )**

**CY 171 – Chemistry**

**( Regulation : 2004 )**

Time : Three Hours

Max.Mark : 100

Answer ALL Questions

Part – A (10 x 2 = 20 Mark)

1. How does the entropy of the system changes when (a) a solid is melted (b) a gas is liquefied.
2. Explain the following (i) Isobaric process (ii) Adiabatic process.
3. What is autocatalysis?
4. Distinguish between adsorption and absorption.
5. Define half-life period.
6. Write the equation for the ester hydrolysis by sodium hydroxide.
7. What are reversible cells?
8. What is overvoltage?
9. What is calorimetry?
10. Define electronic transition.

Part – B (5 X 16 = 80 Mark)

11.a (i) Deduce Maxwell's relations from  $dq = dE + PdV$  and  $H = E + PV$  8 marks

a (ii) Derive Gibb's –Helmholtz equation. 8 marks

12.a (i) Give an account of classification of catalysis with examples. Explain the characteristics of catalysis 8 marks

a (ii) Write note on Freundlich absorption isotherm. 8 marks

OR

12.b (i) Outline the role of adsorption in catalytic reactions. 8 marks

b (ii) Derive Michaelis – Menten equation. 8 marks

13. a (i) Discuss the kinetics of opposing reactions. Mention few examples. 10marks

a (ii) Explain the factors affecting the rate of chemical reaction. 6 marks

OR

13.b (i) Derive an expression for the rate constant of a second order reaction. 10 marks

b (ii) Explain the steady state principle. 6 marks

14.a (i) Derive Nernst equation. 8 marks

a (ii) State Kohlrausch's law. Illustrate its applications 8 marks

OR

14.b (i) Explain ion selective electrodes with suitable examples 8 marks

b (ii) Describe the construction of glass electrode. 8 marks  
Mention its electrode potential..

15.a (i) Explain the Principle, Instrumentation and Application of flame photometer 10 marks

a (ii) State Beer-Lambert's law. Explain how this law can be used to determine the concentration of coloured solutions. 6 marks

OR

15.b (i) Discuss the Principle, Instrumentation and UV-Visible application of Spectrophotometer. 12 marks

b (ii) Mention any four application of IR spectroscopy. 4marks