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GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR

(GIET UNIVERSITY)

Ph.D. (Second Semester-Summer) Examinations, May – 2025

23SPPECY2015– Basic Physical Chemistry

(Chemistry)

Time: 3 hrs Maximum: 70 Marks

The figures in the right hand margin indicate marks.

	Answer *ANY FIVE* Questions. **(14 x 5 = 70 Marks)**	**Marks**
1.a.	Explain zero, 1st and 2nd laws of Thermodyanamics	7
b.	Define the dynamics of unimolecular reaction with the help of lindmann mechanism	7
2.a.	Explain Debye Huckel-Onsager equation	7
b.	Discuss on Ion-solvent interactions, Ion-Ion interactions,	
3.a.	Discuss different model of structure of double layer interfaces.	7
b.	Application of Gibb-Helmholtz equation in electrochemistry	7
4.	What are the postulates of B.E.T. equation? Derive B.E.T. equation.	14
5.a.	Define Microemulsion and reverse micelles	7
b.	Give an account of Thermodynamics of micellization.	7
6.a.	Differentiate adsorption and absorption.	7
b.	Explain the characteristics of physical adsorption and chemical adsorption.	7
7.	Define critical micellar concentration (CMC), Explain in brief the factors affecting CMC of surfactants,	14
8.a.	Derive Nernst's equation.	7
	Find Cell potential (E)cell For the following reaction $Mg(s) + 2\ Ag^{+}\ (0.0001\ M) \longrightarrow Mg^{2+}\ (0.10M) + 2Ag(s)$ The E^{o} electrode values are Mg^{2+} / Mg = – 2.36 V Ag^{+} / Ag = 0.81 V	
b.	Derive the entropy of an ideal gas	7

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