

Name. _____		Printed Pages:01		
Student Admn. No.: _____				
<b>School of Basic Sciences</b> <b>Summer Term Examination – July - August 2024</b> <b>[Programme: M.Sc Chemistry] [Semester: II][ [Batch: ]</b>				
<b>Course Title: Physical Chemistry-II</b> <b>Course Code: C1PK203B</b>		<b>Max Marks: 100</b> <b>Time: 3 Hrs.</b>		
<b>Instructions:</b>	1. All questions are compulsory. 2. Assume missing data suitably, if any.			
		K Level	COs	Marks
<b>SECTION-A (15 Marks)</b>		<b>5 Marks each</b>		
1.	What is the difference between statistical thermodynamics and classical thermodynamics?	K1	1	5
2.	Explain in how many ways 3 identical nondistinguishable molecules can be distributed in 5 energy states?	K2	1	5
3.	Explain the factors influencing the rate of acid-base reactions?	K2	2	5
<b>SECTION-B (40 Marks)</b>		<b>10 Marks each</b>		
4.	Explain the relation of entropy with microstates/configurations of a system and how it varies with temperature?	K2	1	10
5.	Discuss equilibrium treatment and steady state treatment of general catalytic reactions?	K3	3	10
6.	Identify the significance of the partition function in calculating thermodynamic properties of a system?	K4	2	10
7.	Show and explain parallel plate capacitor model of electrified double layer?	K4	4	10
<b>SECTION-C (45 Marks)</b>		<b>15 Marks each</b>		
8.	Explain the fundamental principles of rotational spectroscopy. How are rotational energy levels quantized, and what transitions are observed in rotational spectra?	K4	5	15
9.	Explain and Compare the Lipmann equation with other models of the electrified double layer, such as the Gouy-Chapman theory and the Stern layer model. What are the main similarities and differences?	K5	4	15
10	Discuss and derive selection rule for microwave spectroscopy?	K5	5	15