

FD-610

M.Sc. 3rd Semester Examination, Dec.-Jan., 2021-22

CHEMISTRY

Paper - III

Catalysis, Solid State and Surface Chemistry

<i>Time</i> : Three	Hours]	[Maximum		Marks	:	80
		[Minimum	Pass	Marks	:	16

Note : Answer **all** questions. The figures in the righthand margin indicate marks. Log table or nonprogrammable calculator can be used.

Unit-I

		OR		
	(c)	Describe electronic and structural effect on acidity and basicity.	8	
	(<i>b</i>)	Describe mechanism of Acid-Base dissociation.	8	
1.	(<i>a</i>)	Explain nucleophilicity scales.		

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(Turn Over)

	(<i>a</i>)	What is acidity and basicity? Explain with examples.	4	
	(<i>b</i>)	Explain ambivalent nucleophile with examples.	4	
	(<i>c</i>)	Describe Bronsted acid and base catalysis.	12	
		Unit-II		
2.	(<i>a</i>)	Describe the effect of electrolyte on critical micelle concentration (CMC).	6	
	(<i>b</i>)	Explain the thermodynamics of micellization.	6	
	(c)	Describe the Laplace's equation. How many solutions does Laplace equation have ?	8	
		OR		
	(<i>a</i>)	Describe Gibbs adsorption isotherm.	10	
	(<i>b</i>)	Discuss the factors affecting the critical micelle concentration (CMC) value.	10	
		Unit-III		
3.	(<i>a</i>)	Explain Non-stoichiometry imperfect and perfect crystals with example.	8	
	(<i>b</i>)	Discuss thermodynamics of Schottky defect.	8	
	(c)	Explain formantion of color centres.	4	
OR				

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(Continued)

	(<i>a</i>)	Explain Schottky and Frankel defects with example.	4		
	(<i>b</i>)	Give the thermodynamics of Frenkel defect.	8		
	(c)	Describe electronic properties and band theory of semiconductors.	8		
Unit-IV					
4.	(<i>a</i>)	Define polymers. Mention various types of polymers. Discuss the free radical mechanism of polymerization.	12		
	(<i>b</i>)	Describe the viscometry method of determination of molecular mass.	8		
OR					
	(<i>a</i>)	Discuss the kinetics of polymerization.	4		
	(<i>b</i>)	Give brief account of chain topology and crystal structure of polymers.	6		
	(<i>c</i>)	Derive expression for calculation of average dimensions of various chain			
		structures.	10		

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