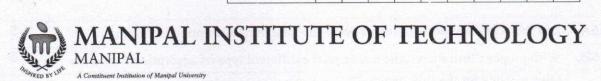
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VI SEMESTER B.TECH. END SEMESTER EXAMINATIONS, MAY2022

SUBJECT: FUNDAMENTALS OF INDUSTRIAL CATALYTIC PROCESS [CHM 4302]

REVISED CREDIT SYSTEM

Time: 3 Hours

23.5.22

MAX. MARKS: 50

Instructions to Candidates:

- Answer ALL the questions.
- Missing data may be suitably assumed.

1A.	Derive the relation between the freezing point depression of a solution and the mole fraction of the dissolved solute. How is this expression used for determining the molar mass of a non-volatile solute?			
1B.	Show that osmotic pressure is a colligative property. Explain Berkeley and Hartley's method for the determination of osmotic pressure			
1C.	The freezing point depression of a $1/200$ molal solution of sodium sulphate in water was found to be 0.0265° C. Calculate the degree of dissociation of the salt at this concentration (K_f for water = 1.86°)			
2A.	Give a brief account of Zeta potential and explain the origin of charge on colloidal particles with a suitable example			
2B.	Discuss the following applications of colloids: (i) removal of dirt from sewage (ii) Detergent action of soap.			
2C.	Write the preparation of gold sol by condensation and dispersion methods			
3A.	State Henry's law. Show that if in any solution, the solute obeys Henry's law within a certain range of concentration the solvent obeys Raoult's law over the same range of concentration			
3B.	(i) A solution containing 4 g of a non volatile organic solute per 100 ml was found to have an osmotic pressure equal to 500 cm of mercury at 27°C. Calculate the molar mass of the solute.			
3C.	Distinguish between ideal and non-ideal solution. Give a suitable example for each			
4A.	alkene and describe individual steps involved.			
4B.	Explain each of the terms - i) Activation by coordination (ii) Activation by addition			
4C.	Write four differences between physical adsorption and chemical adsorption	2		

5A.	List the postulates and discuss in detail the Langmuir adsorption isotherm	5
5B.		
5C.	Give reasons for the following: (i)Acetic acid is more strongly adsorbed from aqueous solution than from	

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