Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.Pharm - SEMESTER– II • EXAMINATION – SUMMER 2017

Subject Code: 2220002 **Date: 07/06/2017**

Subject Name: Pharmaceutical Chemistry-II (Physical Chemistry)

Time: 10:30 AM to 01:30 PM **Total Marks: 80**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	(a)	What is Surface tension? Derive equation to determine surface tension by capillary rise method.	**06**
	(b)	Define following terms: 1. Viscosity 2. Optical activity 3. Partition Coefficient 4. Conductance 5. Refractive Index	**05**
	(c)	Define parachor and dipole moment. Give their application in molecular structure determination.	**05**
Q.2	(a)	Give basic classification of solutions. Give detail difference between ideal and real solutions.	**06**
	(b)	Define colligative properties. Explain Depression of Freezing point.	**05**
	(c)	A solution containing 2.44 gm of solute dissolved in 75 gm of water boiled at 373.413 K. Calculate molecular mass of solute. (k_b of water is 0.52 K, Boiling point of pure water 100°C)	**05**
Q.3	(a)	Define Adsoption isotherm. Write a short note on Langmuir adsoption isotherm.	**06**
	(b)	Give detail difference between physical and chemical adsoption.	**05**
	(c)	Write a short note on Henry's law.	**05**
Q.4	(a)	Derive equation of rate of reaction and half life for first order kinetics.	**06**
	(b)	Write a short note on second order reaction.	**05**
	(c)	50% first order reaction is completed in 23 minutes. Calculate the time required to complete 90% of the reaction.	**05**
Q.5	(a)	Explain difference between: 1. Homogeneous and heterogeneous catalysis. 2. Order of reaction and molecularity. 3. Adsorption and Absorption.	**06**

	(b)	Write a short note on theories of catalysis with mechanism.	**05**
	(c)	Define: 1. Promoter 2. Autocatalysis 3. Heat of combustion 4. Heat of Neutralisation 5. Degree of freedom	**05**
Q. 6	(a)	Define thermodynamics. State and explain first law of thermodynamics with various modification and limitations.	**06**
	(b)	Write a short on various thermodynamic processes.	**05**
	(c)	Give equation of work for reversible expansion of ideal gas. Calculate work done when one mole of an ideal gas at 25°C is allowed to expand reversibly at constant temperature from a volume of 10 liters to 20 liters.($R=8.31\ J\ K^{-1}\ Mol^{-1}$)	**05**
Q.7	(a)	Write a short note on one-component system with example.	**06**
	(b)	Explain Jablonski diagram for various photochemical processes in detail.	**05**
	(c)	State and explain Lambert-Beer's law of Photochemistry.	**05**

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