Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.PHARM - SEMESTER– II EXAMINATION – SUMMER - 2018

Subject Code: 2220002 Date: 24/05/2018

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)**	Define: surface tension. Explain drop weight method for the determination of the surface tension.	**06**
	(b)	Define viscosity & write units of it. Describe principle of Ostwald's viscometer.	**05**
	(c)	Define: (i) Refractive index (ii) Parachor (iii) Specific rotation (iv) Optical activity (v) Dipole moment	**05**
Q.2	**(a)**	State and explain Raoult's law of dilute solution. Discuss deviation of real solution from the Law.	**06**
	(b)	Define: Molarity and Normality. Explain Henry's law in brief.	**05**
	(c)	Define colligative property. Enlist different types of colligative properties. Describe briefly lowering of the vapour pressure.	**05**
Q.3	**(a)**	State and explain first Law of Thermodynamics.	**06**
	(b)	State and explain phase rule. Describe phase diagram of water.	**05**
	(c)	Define Thermodynamics. Write a detail note on Carnot cycle.	**05**
Q.4	**(a)**	What is an adsorption isotherm? Discuss in detail Langmuir adsorption isotherm.	**06**
	(b)	Enlist applications of adsorption. Describe in detail pharmaceutical application.	**05**
	(c)	Differentiate: (1) Physical adsorption and Chemical adsorption. (2) Adsorption and Absorption	**05**
Q.5	**(a)**	Derive the rate constant equation for first order reaction. Explain how to derive half-life equation for first order reaction.	**06**
	(b)	Define chemical kinetics. Discuss the methods of determination of order of a reaction.	**05**
	(c)	Paracetamol solution has initial concentration 500 mg/100 ml. After 40 days the concentration becomes 300 mg/100 ml. The reaction follows first order kinetic. Calculate half-life and reaction rate constant.	**05**
Q. 6	**(a)**	What is Photochemistry? Draw the Jablonski diagram & explain the consequences of light absorption.	**06**
	(b)	Define quantum yield of a photochemical reaction. Give reasons of high and low quantum yield.	**05**
	(c)	Explain the terms: (i) Photochemical reaction (ii) Photosensitiser (iii) Fluorescence (iv) Phosphorescence (v) Thermopile	**05**

Q.7	**(a)**	Differentiate the following pair: (1) Molecularity of a reaction & order of a reaction. (2) Homocatalysis & Heterocatalysis.	**06**
	(b)	Explain the terms: (i) Adiabatic process (ii) Heat of Neutralization (iii) Entropy (iv) Heat of combustion (v) Joule-Thomson effect	**05**
	(c)	Define the term catalyst. Write a note on "Acid- Base and Enzyme catalysis".	**05**

****