

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. **05**
(2) Adsorption and Absorption
- 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 **05**
(iii) Fluorescence (iv) Phosphorescence (v) Thermopile

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

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