

BACHELOR OF SCIENCE (CBCS-2018 COURSE)
S. Y. B. Sc. Sem-IV :SUMMER- 2022
SUBJECT : CHEMISTRY : PHYSICAL & ANALYTICAL CHEMISTRY-II

Day : Wednesday

Date : 6/7/2022

S-18380-2022

Time : 03:00 PM-06:00 PM

Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SAME** answer book.

SECTION – I

- Q.1** Attempt **ANY TWO** of the following: [12]
- a) Describe the phenol-water system.
 - b) Explain the transition state theory.
 - c) Mention the use of colloids in food products and medicine.
- Q.2** Attempt **ANY THREE** of the following: [12]
- a) State and explain Raoult's law.
 - b) 12.8 cm³ of benzene is dissolved in 16.8 cm³ of xylene. Calculate percentage by volume of benzene.
 - c) The strength of HCl solution is 1.825 gm/lit. If the equivalent weight of HCl is 36.5, what is the normality?
 - d) For a certain reaction, the temperature coefficient $\frac{K_{35}}{K_{25}} = 1.75$. calculate the energy of activation. (R = 2 Cals)
- Q.3** a) Attempt **ANY ONE** of the following: [06]
- i) Explain triethylamine – water system.
 - ii) Write a note on 'Chain reactions'.

SECTION – II

- Q.3** b) Attempt **ANY ONE** of the following: [06]
- i) Describe the standardization silver nitrate by Fajan's method.
 - ii) Describe the method of standardization of Iodine with Sodium thiosulphate solution.
- Q.4** Attempt **ANY TWO** of the following: [12]
- a) Explain the titration curve between NaOH and CH₃COOH. At equivalence point, why the pH is on the basic side? Which indication will you choose for this titration? Why?
 - b) Define: i) Mole ii) Molar solution iii) Parts per million iv) Equivalent
 - c) Explain the classification of reaction in volumetric analysis.
- Q.5** Attempt **ANY FOUR** of the following: [12]
- a) Explain universal indicator with example.
 - b) How will you calibrate a volumetric flask?
 - c) What are the characteristics of standard solution?
 - d) What volume of water should be added to 1000 ml of 0.125N reagent to prepare exactly 0.1N solution?
 - e) How many ml of 0.4N HCl are required to neutralize 25 ml of 0.2N NaOH?
 - f) If 25 ml of 0.125 N acid reacts with 35.20 ml of base. What is the normality of base?

* * * *