

S.Y.B.SC. SEM – IV (2014 COURSE) : SUMMER - 2018
SUBJECT : CHEMISTRY : PHYSICAL & ANALYTICAL CHEMISTRY – IV (C – 41)

Day : **Thursday**
Date : **19/04/2018**

Time : **03.00 PM TO 05.00 PM**
Max. Marks : 40

S-2018-0724

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of log table / calculator is **ALLOWED**.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.
- 5) Answers to both the sections should be written in the **SAME** answer book.

SECTION – I (Physical Chemistry)

- Q.1** Attempt **ANY TWO** of the following: [10]
- a) Explain the process of steam distillation.
 - b) Describe consecutive reactions with suitable examples.
 - c) Define the terms: **i)** Normality **ii)** Molarity **iii)** Molality
- Q.2** Attempt **ANY ONE** of the following: [05]
- a) Elaborate on temperature coefficient.
 - b) Explain sewage precipitation as an application of colloids.
- Q.3** Solve **ANY TWO** of the following: [05]
- a) Find the normalities of:
i) 0.1 M H₂SO₄ **ii)** 0.05 M H₃PO₄ **iii)** 0.3 M Ca(OH)₂ **iv)** 0.1 M Cr(OH)₃
 - b) The velocity constants for the decomposition of N₂O₅ at 298 K and 338 K are 3.46 × 10⁻⁵ and 4.87 × 10⁻³ respectively. Calculate the energy of activation. (R = 8.314 J k⁻¹ mol⁻¹)
 - c) Calculate the molarity of the 0.5 dm³ of NaOH solution containing 5.2 × 10⁻³ kg of NaOH. (Atomic weights : Na = 23, O = 16, H = 1)

SECTION – II (Analytical Chemistry)

- Q.4** Attempt **ANY TWO** of the following: [10]
- a) How will you calibrate volumetric flask?
 - b) Describe the method of estimation of available chlorine in bleaching powder.
 - c) Explain the term Iodimetry and Iodometry.
- Q.5** Attempt **ANY ONE** of the following: [05]
- a) Why EDTA proves to be a good titrant in complexometric titration?
 - b) Write a note on "Mixed Indicator".
- Q.6** Solve **ANY TWO** of the following: [05]
- a) How many ml of 0.5 N HCl should be added to 25 ml 0.1 N HCl?
 - b) Calculate the normality of H₂SO₄ solution when 20 ml of it reacts with 25 ml of 0.1 N NaOH solution.
 - c) What volume of water should be added to 1000 ml 0.25 N reagent to prepare exactly 0.1 N solution?

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