S.Y.B.SC. SEM – IV (2014 Course) : SUMMER - 2019

SUBJECT : CHEMISTRY : PHYSICAL & ANALYTICAL CHEMISTRY – IV (C – 41)

Day : Tuesday
Date : 16/04/2019

S-2019-0983

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

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) List different types of solutions.
b) Discuss in detail chain reactions.
c) Elaborate on Raoult's Law.

Q.2 Attempt **ANY ONE** of the following: **[05]**

a) Discuss electrical precipitation of smoke as one of the applications of colloids.
b) Write a short note on collision theory.

Q.3 Solve **ANY TWO** of the following: **[05]**

a) For a certain reaction, the temperature coefficient $\frac{k_{35}}{k_{25}} = 1.75$. Calculate the energy of activation. (R = 2 cals)
b) The strength of $NaCO_3$ solution is 2.12 g per liter. If the equivalent weight of $NaCO_3$ is 53. What is its normality?
c) 5×10^{-3} kg of urea is dissolved in 2×10^{-2} kg of water. Calculate the percent by weight of urea.

SECTION – II (Analytical Chemistry)

Q.4 Attempt **ANY TWO** of the following: **[10]**

a) Describe standardization of $AgNO_3$ solution by Fajans method.
b) Describe standardization of Sodium thiosulphate by iodine.
c) What are mixed indicators? Give preparation of any one mixed indicator.

Q.5 Attempt **ANY ONE** of the following: **[05]**

a) How will you calibrate pipette?
b) What is primary standard substance? What are the requirements of primary standard substances?

Q.6 Solve **ANY TWO** of the following: **[05]**

a) Calculate normality of HNO_3 solution when 25 ml of it reacts with 20 ml 0.25 N NaOH solution.
b) How much water should be added to 500 ml of 0.5 N NaOH to give 0.1 N solution?
c) How many ml of 0.05 N NaOH should be added to Neutralize 25 ml of 0.1 N CH_3COOH?

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