S.Y.B.SC. SEM – IV (CBCS - 2016 Course) : WINTER - 2018

SUBJECT : CHEMISTRY : PHYSICAL & ANALYTICAL CHEMISTRY – II

Day : Thursday
Date : 11/10/2018

W-2018-0724

Time : 03.00 P.M. To 06.00 P.M
Max. Marks : 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Use of scientific **CALCULATOR** is allowed.
4) 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: **[12]**

a) Explain the parallel reaction with suitable examples.
b) Describe the steam distillation process.
c) Discuss the sewage precipitation method.

Q.2 Attempt **ANY THREE** of the following: **[12]**

a) Give a detail account of transition state theory.
b) If the rate of reaction gets doubled from 295 K to 305 K, calculate the energy of activation. (R = 8.368 Joules).
c) The strength of Na_2CO_3 solution is 2.12 gm/lit. If the equivalent weight is 53, what is its normality?
d) 12.8cm^3 of benzene is dissolved in 16.8 cm^3 of xylene. Calculate percent by volume of benzene.

Q.3 A) Attempt **ANY ONE** of the following: **[06]**

a) What is 'solution'? List the different types of solutions.
b) What are ideal and non-ideal solutions? Distinguish between them.

SECTION – II (Analytical Chemistry)

Q.3 B) Attempt **ANY ONE** of the following: **[06]**

a) What are primary and secondary standard substances? What are the characteristics of the standard solutions?
b) Describe the method of standardization of sodium thiosulphate solution with potassium iodate (KIO_3).

Q.4 Attempt **ANY TWO** of the following: **[12]**

a) What is titration curve? Explain the titration curve of strong acid and weak base. Which indicator will you choose for this titration? Why?
b) Define :
i) Neutralization curve **iv)** Neutralization point
ii) End point **v)** Suitable indicator
iii) Equivalence point **vi)** Best indicator
c) Draw a titration curve to show the progress of titration between a metal ion and EDTA. Which indicator will you use for a titration between 0.01M $MgSO_4$ solution and 0.01M EDTA solution? Why?

Q.5 Attempt **ANY FOUR** of the following: **[12]**

a) How will you calibrate a volumetric flask?
b) What is complexometric titration? Draw the structure of EDTA.
c) What are Universal Indicators? Explain with suitable example.
d) What is the normality of the solution that results from the mixing of 50.00 ml of 0.2400 N NaOH with 25.00 ml of 0.1280 N NaOH?
e) How many ml of 0.5 N HCl are required to neutralize 50 ml of 0.1 N NaOH?
f) How much water should be added to 50 ml of 0.25 N HCl to give 0.1 N solutions?

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