B.Sc Part III Examination'2020

Gurudas College Centre

Chemistry Honours(Practical)

Paper- VII B

(Under 1+1+1 System)

Date- 09.10.2020 F.M.- 25

1) Write down the theory for determination of relative viscosity coefficient of a given solution, mentioning the following points. 5
   a) Working formula to determine viscosity coefficient of a liquid, mentioning the terms involved.
   b) Parent equation of viscosity coefficient and dimension of η.

2) Present the given data in proper tabular form and evaluate relative viscosity coefficients of the solutions. 15
   a) At 25^{o} C the time of flow(in second) of water and same volume of two unknown solutions V_1 and V_2 using Ostwald viscometer are,
      for water : 106, 105, 107
      for V_1 : 116, 117, 118
      for V_2 : 123, 125, 125
   b) Weight of empty Sp. gravity bottle, Sp. gravity bottle filled with water, filled with V_1 and filled with V_2 are 9.180gm, 19.289gm, 19.325gm and 19.365gm respectively.

3) Write your Roll No., Registration No. on the index page of Laboratory Notebook and scanned PDF along with answer script. 5

B.Sc Part III Examination'2020

Gurudas College Centre

Chemistry Honours(Practical)

Paper- VIII B

(Under 1+1+1 System)

Date- 09.10.2020 F.M.- 50

1) Write down the theory for kinetics of saponification of ester to determine rate constant conductometrically, mentioning the following points. 10

   a) The chemical reaction, order of the reaction, integrated rate equation for reactions of that order. unit of K.

   b) Deduction of the working formula of the integrated rate equation.

   c) Determination of rate constant from working formula graphically.

2) At 25^{o} C during conductometric determination of rate constant for saffonification of methyl acetate, following data are obtained: 20

   Conductance of a mixture of 25 ml exact (M/60) acetic acid + 25 ml exact (M/60) NaOH solution = 0.69 mS.

   Conductance of exact (M/120) NaOH solution = 1.64 mS

   Kinetic Set: 25 ml exact (M/60) methyl acetate + 25 ml exact (M/60) NaOH solution and time of half discharge = 0.0 sec.

   Time(min): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14

   Conductance (mS): 1.55, 1.48, 1.41, 1.36, 1.31, 1.27, 1.23, 1.20, 1.17, 1.14, 1.09, 1.06

Calculate and plot the desired quantity according to working formula and determine the rate constant graphically.

3) Write your Roll No., Registration No. on the index page of Laboratory Notebook and scanned PDF along with answer script. 10

4) Lab Quiz: 5x2=10

a. Which standard cell is used to calibrate the potentiometer? Give its cell representation.
b. The solubility of calcium phosphate be S, find an expression for its solubility product in terms of S.
c. Calculate the normality of a 1M KMnO4 solution.
d. Write down the name of different components of a polarimeter.
e. What are the factor(s) to be considered for choosing a salt for preparing a salt-bridge?