2021
B.A./B.Sc. Semester VI Honours Examination
University of Calcutta
CHEMISTRY
Paper: CC14P
PRACTICAL
F.M. 30

FAKIR CHAND COLLEGE CENTRE (551)

[Use A4 pages and black ink only for writing answers. Write Roll number and Registration number at the top and page number at the bottom of each page. Scan the current admit card and upload in a single pdf file along with the answer script]

1. Write briefly the theory for the experiment named, Study of the kinetics of KI + $K_2S_2O_8$ reaction and determine the rate constant of the reaction at room temperature, covering the following points.   3+1+6 =10

(i)   The chemical reaction, order and integrated rate equation for reaction of that order.

(ii)   Identification of light absorbing species.

(iii)   Deduction of the working formula from the integrated rate equation with explanation of the terms that appear.

2. Answer all the questions briefly: $2 \times 10 = 20$

   a) While measuring surface tension, the Stalagmometer is always kept vertically – why?

   b) If a 16% acetic acid is half diluted its surface tension increases. Justify

   c) Can the following solution be considered as buffer? Explain briefly.

        2ml 0.1(N) NaOH + 10 ml 0.1(N) oxalic acid

   d) What is the light absorbing species of KI + $K_2S_2O_8$ reaction? Give reaction. Also calculate the change in oxidation number of Sulphur.

   e) In KI + $K_2S_2O_8$ reaction, if we add KCl, what will happen to the rate constant?

   f) State two factors on which molar extinction coefficient of a species depends?

   g) 1(N) $K_2Cr_2O_7$ solution cannot be used in spectrophotometric study – why?

   h) When (M/1000) $KMnO_4$ solution is kept in volumetric flask, the solution appears less intense in the neck compared to the spherical part of the flask – why?

   i) Whether 4(N) ACOH and 4(N) NaOH can be used to determine pK Indicator in your experiment?

   j) Discuss the effect of addition of surfactant (detergent) on surface tension of water.