2019

B.Sc.

2nd Semester Examination

CHEMISTRY (Honours)

Paper - C3P

Full Marks : 20 Time : 2 Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
Illustrate the answers wherever necessary.

1. Estimate the total amount of Fe(III) and Cr(III) in a mixture. 15

2. Laboratory note book. 2

3. Viva Voce. 3

Procedure

1. Prepare 250 ml $\left(\frac{N}{10}\right)$ $K_2Cr_2O_7$ solution.

[Turn Over]

2. (a) Preparation of stock solution —

Transfer the supplied solution marked 'V' into a 250 ml volumetric flask quantitatively and make up the volume up to the mark with distilled water.

(b) Standardize the supplied Mohr solt Solution by standard $\left(\frac{N}{10}\right)$ $K_2Cr_2O_7$ Solution.

3. (a) Separation of Fe (III) from the mixture : —

25 ml stock solution is pipetted out into a 500 ml beaker, diluted to 100 ml with distilled water. The mixture is heated to boiling and then 1 : 1 NH_3 is added drop wise until the smell of NH3 persist. The ppt of $Fe(OH)_3$ is allowed to settle and then the ppt. is filtered with whatman 40 filter paper. Then the ppt is washed with 1% NH_4cl upto 3-4 times. Now the ppt is dissolved in a conical with minimum volume of hot (1 : 1) HCl Solution until the yellow colour disappeared from filter paper 25 ml of conc. HCl is added. Then the solution is heated and Fe (III) is reduced by Alfoil.

(b) Estimation of Iron :—

After reduction the solution is diluted to 200 ml. Then 5 ml conc H_2SO_4, 5 ml of H_3PO_4, and

2-3 drops of BaDs indicator is added and the solution is titrated with standard $\left(\frac{N}{10}\right)$ $K_2Cr_2O_7$.

1000 ml 1(N) $K_2Cr_2O_7$ ≡ 55.85 gu Fe.

4. Estimation of Cr (III) :—

The volume of filtrate containing $CrO_4^=$ is reduced to 50 ml. by evaporation, acidified with 4(N) H_2SO_4 (colour changes from yellow to orange). Now 50 ml of standard $\left(\frac{N}{10}\right)$ mohr solt solution is added to the solution change the colour of solution from orange to colourless. Then 5ml of H_3PO_4 is added to the solution and the solution is titrated by standard $\left(\frac{N}{10}\right)$ $K_2Cr_2O_7$ solution after the addition of 2-3 drops BaDs. At the end point red-violate colour will appear.

1000 ml 1(N) Mohr salt ≡ 17.34 gm cr.
