UG/3rd Sem/CHEM(H)/Pr/19

2019

B.Sc.

3rd Semester Examination

CHEMISTRY (Honours)

Paper - C 6-P

(Practical)

Full Marks : 20 Time : 3 Hours

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

1. Estimate the amount of Cu^{2+} in g/lit in the supplied solution. 15

2. Laboratory Note Book. 2

3. Viva-voce. 3

[Procedure]

i) Preparation of stock solution.

Carefully open the cap of the sample bottle and then transfer the supplied solution quantitatively into a 250

[Turn Over]

ml volumetric flask. Finally make the volume up to the mark using distilled water.

ii) Prepare 250 ml $\left(\frac{N}{20}\right)$ standard $K_2Cr_2O_7$ solution.

iii) Standardisation of given Sodium thiosulphate solution.

Pipette out 25 ml of standard $\left(N/_{20}\right)$ $K_2Cr_2O_7$ solution into a 500 ml conical flask, add 25 ml 4 (N) H_2SO_4, 2g KI. Close the mouth of the conical flask with a watch glass and keep it in a dark place for 2-3 minutes. Dilute with 150 ml of distilled water to adjust the acidity to ~0.5 (N) and titrate the liberated I_2 with the thiosulphate solution till a straw yellow colour appears. Add 2 ml 1% starch indicator. The solution turns intense blue. Continue titration with the thiosulphate solution until the blue colour just disappears and a light green colour persists in the solution. Record the titre value and calculate the strength.

(iv) Estimation of Cu^{2+} ion.

Pipette out 25 ml from the prepared stock solution in a 500 ml conical flask, dilute to 50 ml with distilled water. Neutralise with 1 : 1 aqueous NH_3 dropwise with stirring until a permanent light blue turbidity appears (avoid excess ammonia). Add 2g NH_4HF_2 and shake to obtain a clear solution. Add

10 ml of 10% KI solution and titrate the liberated I_2 immediately with the standardised ~ $\left(N/20\right)$ thiosulphate solution adding the starch indicator near the end point (when the brown colour fades to straw yellow). Continue the titration until the colour fades to pale blue, then add 1 gm of solid NH_4SCN shake and titrate until the pale blue colour just disappears to give milky white solution. Note the titre value and calculate the amount of Cu^{2+} ion present in the supplied solution.

[1000 ml 1 (N) $S_2O_3^{2-}$ solution ≡ 63.546 g Cu^{2+}.]
