M.Sc. RNLKWC-/CEM-195/22

2022

CHEMISTRY PRACTICAL

M.Sc. First Semester End Examination - 2022

PAPER - CEM-195

Full Marks : 50 ***Time : 6 hours***

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

Carry out the following experiment as directed

1. Determine the composition of Dolomite ore ($CaCO_3$ and $MgCO_3$) in the supplied dolomite sample.

(i) Tables	06
(ii) Results	12
(iii) Calculations	05
(iv) Conclution	02

2. Preparation of potassium tris oxalate chroamate (III) trihydrate.

(i) Mention Chemical formula and	03
(ii) Yield in gm	10
(iii) % of yield -	2

3. Viva-voce 07

4. Laboratory notebook 03

Process for determination of the composition of Dolomite

a) **Preparation of 250 mL (M/50) standard $Zn(OAc)_2$ solution:** Prepare the solution in 2% NH_4Cl aqueous solution. Mention the weight taken until 4 decimal point.

b) Standardization of EDTA by standard (M/50) $Zn(OAc)_2$ solution :

25 mL of standard $Zn(OAc)_2$ solution is pipetted out in a 250mL conical flask. 5 mL of NH_4OH-NH_4Cl buffer solution of pH10 is added, followed by addition of 120 mL of water. Add EBT indicator and titrate with EDTA until the colour changes from wine red to blue.

c) Dissolution of dolomite ore

Put the supplied dolomite ore in a 250 mL beaker. Put a glass rod in beaker. Add 10 mL distilled water, 5 mL conc. HCl and 1 mL cond. HNO_3 and stir it until it dissolve. Evaporate the solution nearly to dryness over a low flame on an asbestos board. Add 5 mL conc. HCl, warm and allow to stand for further 5 minutes. Add 20 mL distilled water and warm on a steam bath with stirring. When the solution becomes clear, cool the solution and filter through Watman 41 into a 250 mL volumetric flask. Make up the volume with distilled water.

d) Estimation of total (Mg^{2+} and Ca^{2+}) :

Pipette out 25 mL stoc solution. Dilute to 100 mL with distilled water. Neutralize the acid by (1:1) (V/V) ammonia. Add 5 mL buffer solution pH10, EBT indicator and titrate with EDTA solution till wine red colour changes to blue colour.

e) Estimation of Ca^{2+} :

Pipette out 25 mL stock solution. Dilute to 100 mL with distilled water. Nuetralize the acid by (1:1) (V/V) ammonia. Add 5 mL of KOH solution, carefully mixed by shaking till white turbidity appears. Add calcon indicator and titrate with EDTA solution till wine red colour changes to blue colour.

Procedure of preparation of pottasium tris oxalate chromate(III) trihydrate

2.8 gm of potassium oxalate monohydrate and 5.5 gm oxalic acid dihydrate was taken in a beaker and then 110 to 120 ml water was added to it. 1.9 gm solid $K_2Cr_2O_7$ was added to it in small portion with constant stirring. The solution was concentrated nearly to dryness on cooling deep green shiny crystal of potassium trisoxalato chromate (III) form. The solid was filtered and dried by pressing between filter paper.