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Experiment No-12: Determination of Ca and Mg content in irrigation water.

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Aim: To determine the amount of calcium & magnesium in the given sample of water.

Requirement:

500 ml sample water, calcium precipitating buffer solution, buffer solution pH 10, Eriochrome black T indicator, burette, pipette, flask beaker, 0.01 M EDTA solution, funnels etc.

(To prepare calcium precipitating buffer solution, dissolve 6.0 g. of A.R. ammonium oxalate in 100 ml. distilled water and add 144.0 g. of A.R. grade NH_4Cl and 13-ml. conc. NH_3 -solution to it. Then dilute the bulk to 1.0 liter).



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Procedure

Pipette out 100-ml. of the sample water into dry clean conical flask. Add 30.0 ml of the calcium precipitating buffer solution to it. Stir vigorously Allow it to stand for 1.5 hrs. Then filter this through two filter papers (Whatmann No.42) into dry clean beaker. Now, from the filtrate pipette out 50 mL add 25 mL of distilled water and 50 mL of buffer solution pH 10 add 10 drops of the indicator and titrate again the EDTA solution from the burette till the colour change from wine red to blue. Prepare five sets of such titration. Get a constant reading. Tabulate your observation.



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Calculation:

Constant reading in Exp.10 is the reading for total hardness i.e. due to Ca^{+2} & Mg^{+2} (Say X ml) Constant reading in this Exp.11 is the reading for Mg^{+2} only (Say Y ml).

(X-Y) ml, 0.01 M EDTA required for Ca^{+2} only
Now 1 ml. of 0.01 M EDTA 0.0004008g Ca^{+2}
And 1 ml. of 0.01 M EDTA 0.0002432 g Mg^{+2}

$$(X - Y) * 0.0004008 * 10^6 = \underline{\hspace{2cm}}$$

ppm Ca^{+2} 50

$$\text{And } Y * 0.0002432 * 10^6 = \underline{\hspace{2cm}} \text{ ppm } \text{Mg}^{+2}$$

50



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Observation: Students must complete your calculation with above formula and write proper result.

Sample No	Ca⁺² content (ppm)	content Remark	(ppm)	Mg⁺²
1.				
2.				