

6. 10 g of a sample containing MgCl_2 and CaCO_3 was dissolved in 200 cm^3 of 2 mol dm^{-3} HCl solution. Then this solution was diluted up to 250 cm^3 by adding distilled water. 25.0 cm^3 portion of this solution was reacted with 1 mol dm^{-3} NaOH solution. Volume of NaOH spent was 35.5 cm^3 . Calculate the mass percentage of CaCO_3 in the sample. ($\text{Ca} = 40, \text{C} = 12, \text{O} = 16$)

7. $\text{NH}_3, \text{CCl}_4, \text{CH}_3\text{CH}_2\text{OH}, \text{CHCl}_3, \text{Ar}, \text{H}_2\text{S}, \text{NH}_4\text{Cl}, \text{H}_3\text{O}^+, \text{MgCl}_2$.
Which of the above substances contain following secondary interactions?

- I. Dipole – Dipole forces
- II. Hydrogen bonds
- III. London dispersion forces
- IV. Dative bonds
- V. Ionic bonds

8. Deduce the geometric shapes of following ions using VSEPR theory.

- I. PO_4^{3-}
- II. NO_2^-
- III. ICl_2^-

9. Number of electrons that are in Cr^{3+} ion having one (1) as the azimuthal quantum number is,

- (1) 3 (2) 4 (3) 5 (4) 6 (5) 12

10. i) Complete the table given below after copying it into your answer script.

	Species	Electron pair geometry (A)	Shape (B)	Mark whether presence (✓) or absence (X) of a net dipole moment (C)
I	SF_4			
II	ClF_4^-			
III	NH_2^-			
IV	NO_3^-			
V	ICl_2^-			

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