

















CHEMISTRY

 BCI_3 , a covalent compound, can react with a Cl⁻ ion to form BCI_4^- . Draw and name the shape of BCI_4^- and explain how the bond is formed between Cl⁻ and BCI_3 .

Your response



Tetrahedral. The bond formed is a dative covalent bond. The Cl⁻ ion donates a lone pair of electrons to the B atom.

For all dative covalent/coordinate bond questions you need to be specific and state which atom/ion donates a pair of electrons to which atom/ion instead of giving a generic explanation.

Mark scheme

Comment



CHEMISTRY CREMISTRY Traw the structure of odium chloride.		A S CHEMISTRY	ING Mark
			scheme
	Your response	You are required to draw a 3D diagram for ionic structures and clearly identify the +ve and -ve ions (you should use the actual element symbols for this purpose).	Comment











Your response

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Using the valence electron pair repulsion theory, predict the shape of, and bond angles in COCl₂. 3 bond regions (and no lone

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Comment

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pairs of electrons) repel each other as far apart as possible to form a trigonal planar shape with a bond angle of 120°.

For these questions simple count the number of lone pairs and the number of bonding regions around the central atom to determine the shape and bond angle.

















250 cm³. A 25.0 cm³ portion of this solution was titrated against 0.112 mol dm⁻³ NaOH and 21.7 cm³ were required to reach the end point. Calculate the number of moles of HCl produced and the number of moles of ZCI_4 present in the sample. Calculate the relative molecular mass, M_r , of ZCI_4 . Find the relative atomic mass of Z and hence its identity. Your response mole ratio from the equation. use 3 principles: moles = concentration x volume/1000; moles = mass/Mr; Comment have used. Mole calculations appear challenging, but essentially only ever recommend using highlighters in the exam and crossing off any values you lo help you see through all the information provided, I strongly Iherefore element 2 is Germanium $L_{1}T_{1} = (2.55 \times 4) 241 - 7.412 = 7.412$ 7.412 = 27000.0/8405.1 = 200M.on / 226m = 7M $moles XCl_4 = 0.0243 / 4 = 0.006075$ Mark scheme Ratio ZCI₄ : HCI = 1: 4 moles of HCl in 250 cm³ = $0.00243 \times 10 = 0.0243$ moles HCl in 25 cm⁵ = 0.00243 (##200.0 moles NaOH used = vol / $1000 \times \text{conc} = 21.7$ / $1000 \times 0.012 = 0.00242$ to CHEMISTRY **AMOUNT OF SUBSTANCE**

CHEMISTRY $ZCI_4(I) + 2H_2O(I) \rightarrow ZO_2(s) + 4HCl(aq)$ $I.304 \text{ g of } ZCI_4 \text{ was added to water. } ZO_2 \text{ was removed and the resulting solution was made up to}$ $2EO_{12}m^{-3} + 2EO_{12}m^{-3}$ particle of this solution was titrated against 0.112 mol dm⁻³ NaOH and 212

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AMOUNT OF SUBSTANCE





 $MgCO_3 + 2HCI \rightarrow MgCI_2 + CO_2 + H_2O$ 1.25g of impure $MgCO_3$ were reacted with 70cm³ of 0.4moldm⁻³ HCI. After the reaction some acid was left over. Titration with NaOH required 25.3cm³ of 0.4moldm⁻³ of NaOH to neutralise the left over acid. Calculate the % of MgCO₃ in the impure sample.

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AMOUNT OF SUBSTANCE

Your response



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AMOUNT OF SUBSTANCE





