	Marks
• Balance the following equation: $$Fe_2O_3(s) + CO(g) \rightarrow Fe(s) + CO_2(g)$$	2
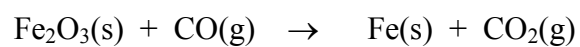
• Calculate the mass of sodium hydroxide required to make 500 mL of a 0.200 M aqueous solution.

6

Answer:

What volume of the above solution would be required to neutralise 50.0 mL of 0.100 M hydrochloric acid solution?

Answer:

	Marks
• Aluminium acts as a reducing agent in the thermite reaction where Fe_2O_3 is reduced to metallic iron. Write a balanced equation for the thermite reaction.	4

What is the maximum theoretical mass of Fe that can be produced when 270 g of Al reacts with excess Fe_2O_3 in the thermite reaction?

Answer:

		Marks
• Give the formula and name of a binary ionic compound formed from the following elements.		**6**

	Formula	Name
magnesium and oxygen		
barium and bromine		
sodium and nitrogen		
potassium and oxygen		

• Explain why some ionic compounds are soluble in water and usually insoluble in hydrocarbon solvents such as kerosene.

2

	Marks
• The relative atomic mass of magnesium is reported as 24.3. Show how this figure is calculated given the natural abundances of the following isotopes of magnesium: ^{24}Mg (79.0 %); ^{25}Mg (10.0 %); ^{26}Mg (11.0 %).	**2**

• With examples, briefly explain what allotropes are.

2

• Complete the following table.

2

Formula	Name
Na_2CO_3	
	iron(III) oxide
PCl_3	
	ammonia