

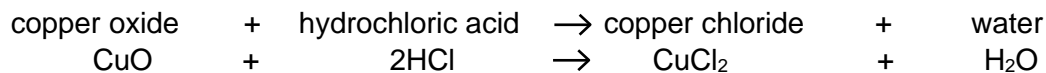
GCSE Chemistry B (Twenty First Century Science)
J258/02 Depth in chemistry (Foundation Tier)

Question Set 6

1

Amir makes some copper chloride. He reacts copper oxide with dilute hydrochloric acid.

This is an equation for the reaction.



(a) Amir does a calculation to work out how much copper chloride he can make from some copper oxide (the **theoretical yield**).

(i) He starts by working out the relative formula masses of the compounds in the equation.

Complete **Table 6.1** by working out the missing relative formula masses.

Use the Periodic Table to help you.

Name of compound	Formula	Relative formula mass
copper oxide	CuO	79.5
hydrochloric acid	HCl	
copper chloride	CuCl ₂	134.5
water	H ₂ O	

Table 6.1

[2]

(ii) Amir uses 8 g of copper oxide in his experiment.

What is the theoretical yield of copper chloride from 7.95 g of copper oxide?
Use **Table 6.1** and the equation to help you.

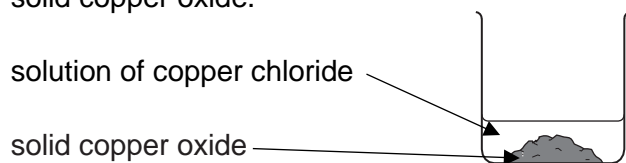
Put a (ring) around the correct answer.

0.1345 g **1.345 g** **13.45 g** **134.5 g**

[1]

- (b) Amir adds 8 g of solid copper oxide to a small amount of dilute hydrochloric acid in a beaker. Some of the copper oxide does not react.

He now has a mixture which contains a solution of copper chloride and some solid copper oxide.



- (i) Amir uses different techniques to separate solid copper oxide and to obtain crystals of copper chloride from the mixture.

Draw lines from each **substance** to the correct **technique**.

Substance	Technique
	Distillation
Solid copper oxide	Evaporation
Copper chloride crystals	Filtration
	Titration

[2]

- (ii) Amir's percentage yield for this experiment is very low.

Suggest a reason why.

[1]

Total Marks for Question Set 6: 6

Resource Materials

The Periodic Table of the Elements

(1)	(2)											(3)	(4)	(5)	(6)	(7)	(8)	
1	2											13	14	15	16	17	18	
1 H hydrogen 1.0																		2 He helium 4.0
3 Li lithium 6.9	4 Be beryllium 9.0											5 B boron 10.8	6 C carbon 12.0	7 N nitrogen 14.0	8 O oxygen 16.0	9 F fluorine 19.0	10 Ne neon 20.2	
11 Na sodium 23.0	12 Mg magnesium 24.3											13 Al aluminium 27.0	14 Si silicon 28.1	15 P phosphorus 31.0	16 S sulfur 32.1	17 Cl chlorine 35.5	18 Ar argon 39.9	
19 K potassium 39.1	20 Ca calcium 40.1	21 Sc scandium 45.0	22 Ti titanium 47.9	23 V vanadium 50.9	24 Cr chromium 52.0	25 Mn manganese 54.9	26 Fe iron 55.8	27 Co cobalt 58.9	28 Ni nickel 58.7	29 Cu copper 63.5	30 Zn zinc 65.4	31 Ga gallium 69.7	32 Ge germanium 72.6	33 As arsenic 74.9	34 Se selenium 79.0	35 Br bromine 79.9	36 Kr krypton 83.8	
37 Rb rubidium 85.5	38 Sr strontium 87.6	39 Y yttrium 88.9	40 Zr zirconium 91.2	41 Nb niobium 92.9	42 Mo molybdenum 95.9	43 Tc technetium	44 Ru ruthenium 101.1	45 Rh rhodium 102.9	46 Pd palladium 106.4	47 Ag silver 107.9	48 Cd cadmium 112.4	49 In indium 114.8	50 Sn tin 118.7	51 Sb antimony 121.8	52 Te tellurium 127.6	53 I iodine 126.9	54 Xe xenon 131.3	
55 Cs caesium 132.9	56 Ba barium 137.3	57-71 lanthanoids	72 Hf hafnium 178.5	73 Ta tantalum 180.9	74 W tungsten 183.8	75 Re rhenium 186.2	76 Os osmium 190.2	77 Ir iridium 192.2	78 Pt platinum 195.1	79 Au gold 197.0	80 Hg mercury 200.6	81 Tl thallium 204.4	82 Pb lead 207.2	83 Bi bismuth 209.0	84 Po polonium	85 At astatine	86 Rn radon	
87 Fr francium	88 Ra radium	89-103 actinoids	104 Rf rutherfordium	105 Db dubnium	106 Sg seaborgium	107 Bh bohrium	108 Hs hassium	109 Mt meitnerium	110 Ds darmstadtium	111 Rg roentgenium	112 Cn copernicium		114 Fl flerovium		116 Lv livermorium			

Key atomic number Symbol name relative atomic mass
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