0 3	A student plans a method to prepare pure crystals of copper sulfate.		
	The student's method is:		
	 Add one spatula of calcium carbonate to dilute hydrochloric acid in a beaker. When the fizzing stops, heat the solution with a Bunsen burner until all the liquid is gone. 		
	The method contains several errors and does not produce copper sulfate crystals.		
	Explain the improvements the student should make to the method so that		
	pure crystals of copper sulfate are produced. [6 marks]		

6

Turn over ▶



Question	Answers	Mark	AO / Spec. Ref.
03	Level 3: Relevant points (reasons / causes) are identified, given in detail and logically linked to form a clear account.	5–6	AO3
	Level 2: Relevant points (reasons / causes) are identified, and there are attempts at logical linking. The resulting account is not fully clear.	3–4	AO3
	Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking.	1–2	AO1
	No relevant content	0	
	Indicative content:		5.4.2.3
	uses sulfuric acid not hydrochloric acid or sulfuric acid needed		
	uses copper carbonate / oxide not calcium carbonate or copper carbonate / oxide needed		
	add solid until solid remains or is in excess or no more reacts / dissolves so that most / all of the acid reacts		
	filter to remove excess or unreacted carbonate / oxide / solid		
	 heat gently or partially evaporate or leave until crystals appear or to crystallise 		
	for level 3 the correct chemicals must have been selected		
Total		6	