

Qu	Marking Guidance	Additional Comments	Mark	
3.1	M1: Mass Na ₂ CO ₃ = 0.57g AND Mass H ₂ O = 0.55g	If incorrect masses other than AE, lose M1 & M3	1	
	M2: Mol Na ₂ CO ₃ = $\frac{0.57}{106}$ AND Mol H ₂ O = $\frac{0.55}{18}$	M2 = process	1	
	M3: = <u>0.0054</u> : <u>0.0306</u>	M3 = these values only (at least 2sf)	1	
	M4: ÷by smallest = 1 : 5.682	M4 = process mark	1	
	M5: Value of x = 5.68 (2dp)	Allow 5.67 – 5.74	1	
	OR		OR	
	M1: Mass Na ₂ CO ₃ = 0.57g AND Mass Na ₂ CO ₃ .xH ₂ O = 1.12g		1	
	M2: Moles anhydrous Na ₂ CO ₃ = $\frac{0.57}{106}$ = 5.377 x 10 ⁻³		1	
	M3: M _r of hydrated Na ₂ CO ₃ = 1.12/5.377 x 10 ⁻³ = 208.3		1	
	M4: M _r of x H ₂ O = 102.3		1	
M5: Value of x = 5.68 (2dp)	Allow 5.67 – 5.74	1		
3.2	Failure to drive off all the water OR Failure to heat for long enough OR Not heated to constant mass	Allow evaporate instead of drive off Ignore incomplete reaction	1	
	3.3	Heat to constant mass / heat for longer / use a smaller mass	Ignore incomplete reaction	1
		You can be sure all / more of the water has been driven off	M2 dependent on M1	1