

Reversible Reacts + Dynamic Equilibrium

Mark Scheme

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Chemistry
Exam Board	AQA
Topic	5.6 Rate + Extent Chemical Change
Sub-Topic	Reversible Reacts + Dynamic Equilibrium
Difficulty Level	Bronze Level
Booklet	Mark Scheme

Time Allowed: 55 minutes

Score: /55

Percentage: /100

Grade Boundaries:

M1.(a)	(i)	ions cannot move <i>allow only conducts as a liquid</i>	1
	(ii)	chlorine	1
	(iii)	they are positively / oppositely charged or they are attracted	1
	(iv)	2	1
(b)	(i)	any one from: • not all the magnesium was collected <i>allow some magnesium was lost</i> • <i>used less time or lower current or different battery / power pack or different balance or lower voltage</i> • error in reading balance • error in recording result	1
	(ii)	1.11 <i>correct answer with or without working gains 2 marks.</i> <i>if answer incorrect, allow 1 mark for 0.99</i> <i>or for 1.13 + 1.11 + 1.09</i>	2
(c)	(i)	25 – 25.3 <i>correct answer with or without working gains 2 marks.</i> <i>If answer incorrect, allow 1 mark for 24 / 95</i>	2
	(ii)	71	1
(d)	(i)	reversible reaction	1
	(ii)	decreases	1
			[12]

M2. (a) reversible 1

(b) (from blue) to pink
*do **not** accept*
incorrect initial colour 1

(c) sensible answers such as:
• stop water reaching papers
accept stop entry of moisture / wet / dampness / condensation
• water (vapour) in air
ignore references to toxicity of cobalt chloride 1

[3]

M3. (a) 22 1

(b) (i) exothermic 1

(ii) C 1

gives out most heat energy
accept has largest temperature change / increase
*allow has highest (final) temperature **or** hottest* 1

(c) (i) increases

1

(ii) blue

ignore pale / dark etc

1

(iii) reversible (reaction)

*allow goes both ways **or** two / either way*

1

(iv) anhydrous copper sulfate

1

[8]

M4. (a) gases

1

white

1

solid

1

ammonium chloride

1

(b) reversible

allow phonetic spelling

allow goes both / two / either way(s)

1

[5]

- M5.** (a) white to blue
accept colourless to blue 1
- (b) reversible 1
- [2]
- M6.** (a) water
accept H_2O or $5H_2O$
2 must be below halfway 1
- (b) the cold water / ice / cubes (owtte)
accept 'cooled down' or references to cold 1
- (c) reversible reaction 1
- (d) (i) 0.87g 1
- (ii) the student made errors in weighing during the experiments 1
- the student did not heat the copper sulfate for long enough in one of the experiments 1
- (e) white

			1	
	blue			
	<i>allow 1 mark for blue to white</i>		1	
				[8]
M7.	(a)	endothermic and because it takes in heat / energy <i>both for one mark</i>	1	
	(b)	(i) reversible reaction (or explanation)	1	
		(ii) add water <i>do not accept cooling or reverse the reaction</i>	1	
				[3]
M8.	(a)	(i) high and low <i>both needed for mark</i>	1	
		(ii) reversible	1	
		(iii) to prevent ammonium chloride / solid / particles escaping <i>idea of a filter</i> <i>do not accept 'to prevent gases escaping'</i>	1	
	(b)	endothermic	1	
				[4]

- M9.** (a) Bunsen (burner)
accept spirit burner do not credit candle 1
- (b) blue 1
- white
credit (1) if both colours correct but answers are reversed 1
- to cool the tube (B)
accept answers which anticipate part (d) e.g. 'to condense the water vapour' or gases or vapours 1
- (d) (i) water
do not credit 'condensation' 1
- (ii) (Water) vapour from the crystals (from tube A)
accept steam or steam from tube A 1
- condenses or cools
accept turns to (liquid) water 1
- (e) add water
gets hot or hotter or warm or warmer turns into solution
dissolves
*or the temperature rises or there is an exothermic reaction
accept steams or hisses ignore any reference to colour(s)* 2
- (f) sulphuric acid
accept H₂SO₄ only if correct in every detail 1

