#### TOPICAL PAST PAPER QUESTIONS

## Edexcel International GCSE Chemistry (4CI1) [Paper 1C]

Exam Series: Jan 2017 - Jan 2023

Format Type A:
Answers to all questions are provided as an appendix



#### Introduction

Each Topical Past Paper Questions Compilation contains a comprehensive collection of hundreds of questions and corresponding answer schemes, presented in worksheet format. The questions are carefully arranged according to their respective chapters and topics, which align with the latest Edexcel International GCSE subject content. Here are the key features of these resources:

- 1. The workbook covers a wide range of topics, which are organized according to the latest syllabus content for Edexcel IGCSE or AS/A Level exams.
- 2. Each topic includes numerous questions, allowing students to practice and reinforce their understanding of key concepts and skills.
- 3. The questions are accompanied by detailed answer schemes, which provide clear explanations and guidance for students to improve their performance.
- 4. The workbook's format is user-friendly, with worksheets that are easy to read and navigate.
- 5. This workbook is an ideal resource for students who want to familiarize themselves with the types of questions that may appear in their exams and to develop their problem-solving and analytical skills.

Overall, Topical Past Paper Questions Workbooks are a valuable tool for students preparing for Edexcel IGCSE or AS/A level exams, providing them with the opportunity to practice and refine their knowledge and skills in a structured and comprehensive manner. To provide a clearer description of this book's specifications, here are some key details:

- Title: Edexcel IGCSE Chemistry (4CH1) Paper 1C Topical Past Papers
- Subtitle: Exam Practice Worksheets With Answer Scheme
- Examination board: Pearson Edexcel
- Subject code: 4CH1
- Years covered: Jan 2017 Jan 2023
- Paper: 1C
- Number of pages: 901
- Number of questions: 241



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### Chapter 1

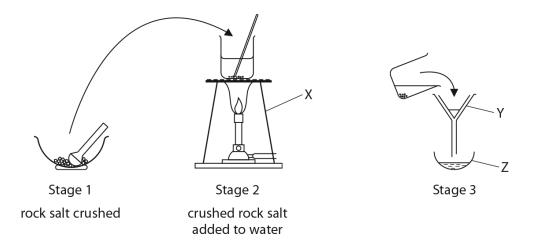
Assessing Investigative / Experimental Skills

#### 8

 $1.\ 4{\rm CH0\_1C\_que\_20190110}\ {\rm Q:}\ 2$ 

Rock salt is a mixture of the soluble salt, sodium chloride, and some insoluble impurities.

The diagram shows the first three stages of a method used to obtain pure sodium chloride from rock salt.



(a) Name the pieces of apparatus labelled X, Y and Z

(3)

Z	
Υ	
Х	

(b) (i) State why the mixture of rock salt and water is warmed and stirred in stage 2. (2)

(ii) What is water in stage 2?

(1)

- A a residue
- B a solute
- **D** a solvent

(c) (i) E	Explain what happens to the impurities in stage 3.	(2)
(ii) \	What is the liquid collected at the end of stage 3?	(1)
$\boxtimes$ $I$	<b>A</b> a residue	
×	<b>B</b> a solute	
	<b>C</b> a solution	
× [	<b>D</b> a solvent	
	(Total for Ouestion 2 = 9 n	narks)

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 $2.\ 4{\rm CH0\_1C\_que\_20180110}\ {\rm Q:}\ 4$ 

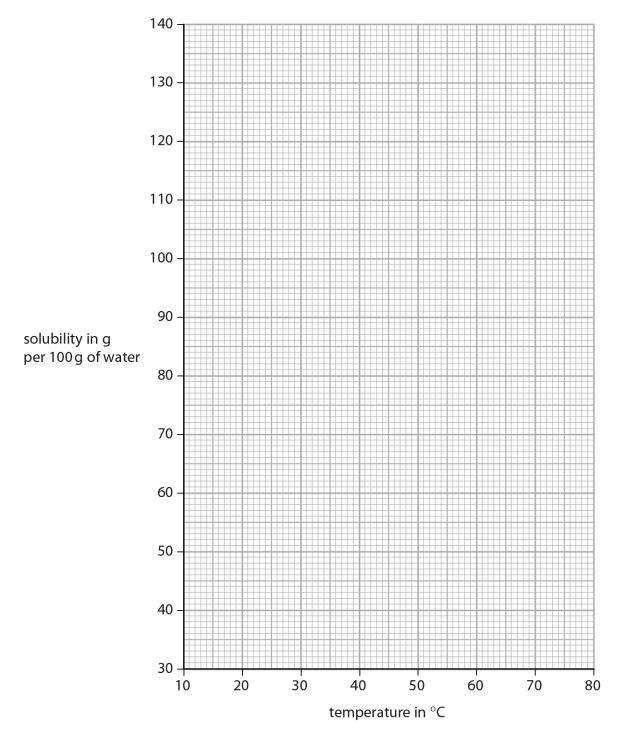
The maximum mass of a solid that dissolves in 100 g of water at a given temperature is called its solubility.

The table gives the solubility of potassium nitrate at six different temperatures.

Temperature in °C	20	30	40	50	60	70
Solubility in g per 100 g of water	41	52	65	83	106	135

(a) Plot the points on the grid and draw a curve of best fit.

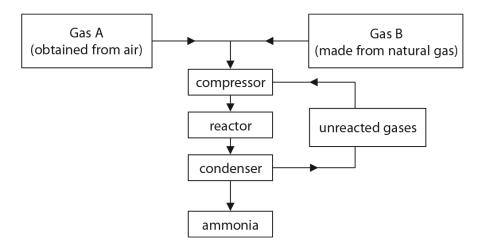
(3)



(b)	Extend your curve to find the solubility of potassium nitrate at 10 $^{\circ}$ C.	(2)
	solubility = g per 10	00g of water
(c)	Use your graph to find the maximum mass of potassium nitrate that could dissolve in 50 g of water at 35 $^{\circ}\text{C}.$	(2)
		(2)
		_
	maximum mass =(Total for Question 4 = 7 ma	9

#### $3.\ 4{\rm CH0\_1C\_que\_20180110}\ {\rm Q:}\ 15$

The flow diagram shows the main stages in an industrial process to manufacture ammonia.



(a) Give the name of this industrial process.

(1)

(b) Identify gases A and B.

(2)

gas B.....

(c) State the purpose of the condenser. (1)

gas A.....

(d) Name the catalyst that is used in the reactor.

(1)

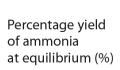
(e) Suggest two reasons why the unreacted gases are recycled.

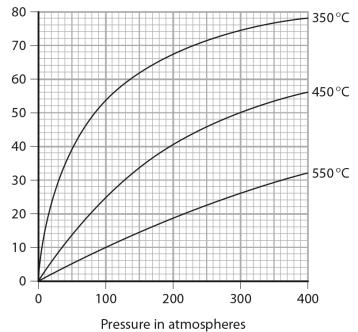
(2)

2

(f) The reaction to make ammonia is reversible and can reach a position of equilibrium.

The graph shows the percentage yield of ammonia at equilibrium, and at different temperatures and pressures.





(i) State the conditions of temperature and pressure that would produce the largest percentage yield of ammonia.

(2)

(ii) Find the percentage yield of ammonia at equilibrium, at a pressure of 200 atmospheres and a temperature of 450 °C.

(1)

(iii) Suggest why, in the industrial process, the percentage yield of ammonia at 200 atmospheres and 450 °C is only 15%.

(1)

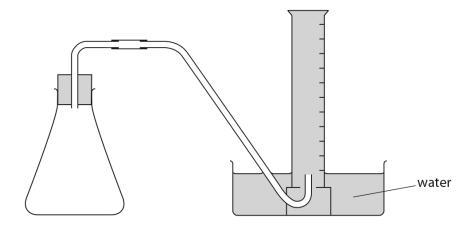
(Total for Question 15 = 11 marks)

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4. 4	${ m 4CH0\_1C\_que\_201}$	180517 Q: 11				
	Malachite is an o that are insoluble		ontaining cop	pper(II) carbonate	e and several other comp	ounds
	You are supplied	with several pi	eces of mala	chite, these cher	nicals and items of appar	atus.
	Chemicals:	dilute sulfuric	acid r	magnesium pow	der	
	Apparatus:	beakers	filter funne	l and paper	pestle and mortar	
	Describe how yo copper from the		e chemicals	and the apparatu	us to obtain a sample of	
						(6)
				(Tota	l for Question 11 = 6 ma	rks)

 $5.\ 4{\rm CH0\_1CR\_que\_20170518}\ {\rm Q:}\ 5$ 

A student uses this apparatus to investigate the rate of reaction between an excess of magnesium and two different dilute acids, X and Y.



This is the method given to the student.

• place 0.5 g of magnesium ribbon into the conical flask

State the other change needed to the method.

- use a measuring cylinder to add 50 cm<sup>3</sup> of dilute acid X and then replace the bung
- record the total volume of gas collected every 20 seconds for two minutes
- repeat the method using 50 cm<sup>3</sup> of dilute acid Y instead of dilute acid X
- in each experiment, keep the temperature the same and the magnesium in excess
- (a) The student decides to use a burette, rather than a measuring cylinder, to add the acid to the conical flask.
  - (i) Using a burette would be an improvement only if another change is made to the method.

(1)

(ii) State the advantage of using a burette.	(1)

#### (b) The table shows the student's results.

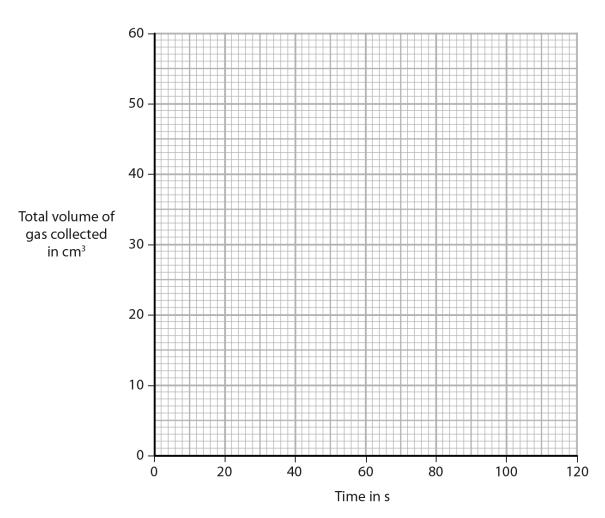
	Time in s	0	20	40	60	80	100	120
Acid X	Total volume of gas collected in cm <sup>3</sup>	0	6	11	15	18	20	21
Acid Y	Total volume of gas collected in cm <sup>3</sup>	0	12	22	30	37	43	48

Plot the results for each acid on the grid.

Draw a curve of best fit for each set of points.

Label each curve as acid X or acid Y.

(4)



(c) Explain how the curves show which acid has the greater concentration.	(2)
(d) Use the graph to find the total volume of gas collected at 70 s for acid X.	
Show on the graph how you obtained your answer.	(2)
volume of gas —	cm³
(e) The average (mean) rate of the reaction for acid Y can be calculated using expression	
$average rate = \frac{total \ volume \ of \ gas \ collected}{time \ to \ collect \ the \ gas}$	
Calculate the average rate, in cm <sup>3</sup> /s, for the first 30 s for acid Y.	(2)
average rate =	cm³/s
(Total for Question 5	

## Chapter 2

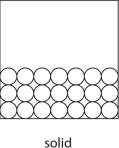
## Principles of chemistry

#### 2.1 States of matter

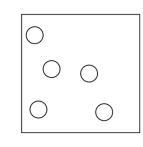
 $6.\ 4ch1\_1c\_que\_20230112\ Q{:}\ 1$ 

This question is about the three states of matter, solid, liquid and gas.

(a) The diagram shows how particles of a substance are arranged in two of these states.







gas

(i) Complete the diagram to show how particles are arranged in the liquid state.

liquid

(1)

(ii) Identify the state of matter that contains particles with the least energy.

(1)

(b) The table shows two changes of state.

Complete the table by giving the name of each change of state.

(2)

Change of state	Name
solid to liquid	
solid to gas	

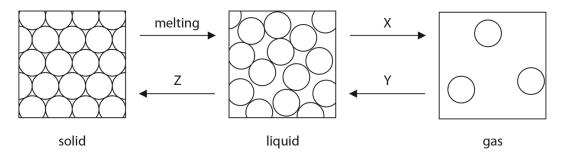
(c)	Explain	why hot	water	evaporates	more	auickly	than	cold	water.
-----	---------	---------	-------	------------	------	---------	------	------	--------

(2)

(Total for Question 1 = 6 marks)

7.  $4ch1_1cr_que_20230112$  Q: 1

The diagram shows how the particles are arranged in the three states of matter.



(a) Use words from the box to identify the changes of state X, Y and Z.

conden	sing	cooling	crystalli	sing	diffusing
	evapora	ting	freezing	heating	9

X
Y
Z
(b) Describe the differences in the movement of particles in solids and gases.
(2)

(Total for Question 1 = 5 marks)

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(a) (i) State the meaning of the term <b>solute</b> .	(1)
(ii) State the meaning of the term <b>solvent</b> .	(1)
b) Explain what is meant by a saturated solution.	(2)
c) A dark purple liquid is diluted by adding water.	
The diluted liquid becomes a pale purple colour.	
Explain the process that causes this change.	
Refer to particles in your answer.	(2)

9.  $4CH1_1C_que_20210304$  Q: 1

This question is about states of matter.

(a) Use the words solid, liquid or gas to give the initial and final state of matter for each of the changes listed in the table.

The first one has been done for you.

(3)

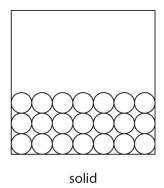
Change	Initial state	Final state
melting	solid	liquid
sublimation		
condensing		
evaporation		

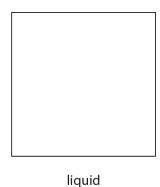
(b) Particles in a solid are closely packed, arranged in a regular pattern and vibrate about fixed positions.

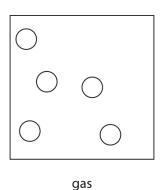
Describe the arrangement and movement of the particles in a gas.	
	(3)
(Total for Question 1 – 6 may	rks)

This question is about states of matter.

(a) The diagram shows how the particles of a substance are arranged in two different states.







(i) Complete the diagram to show how particles are arranged in the liquid state.

(1)

(ii) Identify the state of matter in which the particles have the most energy.

(1)

(b) The state symbols (s), (l), (g) and (aq) are often used in chemistry.

The table shows some physical changes.

Complete the table by giving the state symbol before and after each change.

(3)

	State symbol									
Physical change	before change	after change								
water evaporates										
crystals of iodine sublime										
ice melts										

(c)	) Explain why hot water evapo	orates more quickly than cold water.

r	90	h	٦	
ı	4	r	1	
ı.	_		,	

 	 	 	 	 	•••••	 	 	 	 	 	 	•••••	 						

(Total for Question 2 = 7 marks)

11	4CH0	1C	ane	20190110	O٠	1
тт.	40110	10	que	20130110	$\omega$ .	_1

The three states of matter are solid, liquid and gas.

(a) Substances can be changed from one state to another.

The box lists some words relating to changes of state.

condensing	cooling	evaporation
heating	melting	sublimation

Complete the table by giving the correct word from the box for each change of state.

Each word may be used once, more than once, or not at all.

(3)

Change of state	Name of change
from solid to liquid	
from liquid to gas	
from solid to gas	

(b) The particles in a solid are closely packed, arranged in a regular pattern and vibrate about a fixed position.

Desc	ribe the	arrange	ment an	id move	ment o	f the pa	rticles ir	a gas.	(3	3)
									(-	,


(Total for Question 1 = 6 marks)

12	4CH1	1CR	ane	20190517	O	1
14.	40111	101	que	20190011	w.	_1

This question is about the three states of matter, solid, liquid and gas.

(a) Solids, liquids and gases can be changed from one state to another.

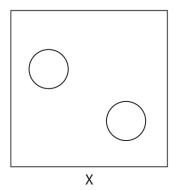
The box gives the names of some changes of state.

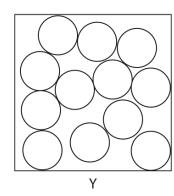
	condensing	evaporation	melting	sublimation	
Use	words from the box to o	complete the sente	ences.		
Each	word may be used one	ce, more than once	or not at all.		
(i) T	he change from solid to	o liquid is called			(1)
(ii) T	he change from liquid	to gas is called			(1)
(iii)	he change from solid to	o gas is called			(1)
(b) Des	cribe the arrangement a	and the movemen	t of particles	in a solid.	(3)
			(Total	for Question 1	= 6 marks)

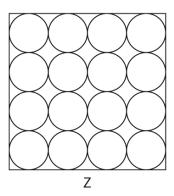
13.  $4CH0_1C_que_20180110$  Q: 2

The diagram shows the arrangement of particles in the three states of matter.

Each circle represents a particle.







(a) Use the letters X, Y and Z to give the starting and finishing states of matter for each of the changes in the table.

The first one has been done for you.

(3)

Change	Starting state	Finishing state
ice to water	Z	Υ
solid iodine to iodine gas		
molten iron to solid iron		
ethene to poly(ethene)		

(b) Which of these changes takes place when solid iodine is heated to form iodine gas?

(1)

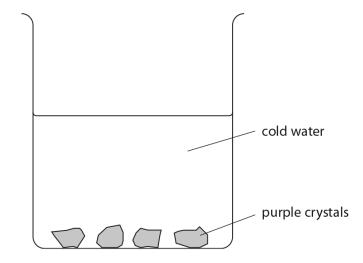
- A crystallisation
- B evaporation
- C melting
- D sublimation

(Total for Question 2 = 4 marks)

 $14.\ 4{\rm CH0\_1C\_que\_20180110}\ {\rm Q}{\rm :}\ 3$ 

A student places a few purple crystals at the bottom of a beaker containing some cold water.

The crystals start to dissolve.



(a) State how the appearance of the crystals and the water change as the crystals dissolve.

(2)

crystals	
water	

(b) Which process occurs as the crystals dissolve to form a solution?

(1)

- A condensation
- ☑ B crystallisation
- D melting

(c) The student repeats the experiment using hot water instead of cold water.	
(i) State how the change in the appearance of the water differs when hot water is used instead of cold water.	(1)
(ii) Explain, in terms of particles, why the change differs when hot water is used instead of cold water.	(2)
(Total for Ouestion 3 = 6 ma	

## Appendix A

## Answers

#### 1. 4CH0\_1C\_rms\_20190110 Q: 2

Question	Answer	Notes	Marks
<b>number</b> (a)	M1 tripod M2 Y (filter) funnel	ACCEPT correct labelling on diagram if answers not on answer lines	
	M3 Z evaporating basin/dish	ALLOW evaporating bowl	3
(b)(i)	M1 so the sodium chloride/salt dissolves	REJECT so the rock salt dissolves	2
	M2 (more) quickly	IGNORE references to increased rate of reaction	
(ii)	<b>D</b> a solvent	M2 dep on mention of dissolving in M1	1
(c)(i)	M1 impurities remain in filter paper/funnel	ALLOW impurities are filtered out/off /are the residue	2
	M2 because they are insoluble / do not dissolve	ACCEPT because the particles are too large to pass through (filter paper)	
(ii)	<b>C</b> a solution		1

	Total for Question 2 = 9 marks
compiled by examinent.com	

#### 2. 4CH0\_1C\_rms\_20180110 Q: 4

Question number	Answer	Notes	Marks
(a)	140 130 120 110 100 90 80 70 60 50 40 30 10 20 30 40 50 60 70	M1 and M2 all points plotted correctly to nearest gridline  Penalise 1 mark for each point plotted incorrectly  M3 suitable curve of best fit drawn for points plotted  Do not consider any extrapolation of curve for M3	3
(b)	<ul> <li>M1 curve correctly extrapolated to cut y axis (at 10 °C)</li> <li>M2 correct reading to nearest gridline from curve drawn</li> </ul>	typical answer in range 32-33	2
(c)	<ul> <li>M1 correct reading to nearest gridline at 35 °C from curve drawn</li> <li>M2 value from M1 divided by 2 and correctly evaluated</li> </ul>	typical answer = 58	2

	Total 7 marks
 compiled by examinent.com	

3. 4CH0\_1C\_rms\_20180110 Q: 15

Question number	Answer	Notes	Marks
(a)	Haber (process)		1
(b)	M1 (gas A) - nitrogen/N <sub>2</sub>	If name and formula given both must be correct	1
	M2 (gas B) - hydrogen/H₂	If both answers correct but in wrong order award 1 mark	1
(c)	to liquefy the ammonia	IGNORE to condense the ammonia ALLOW to separate the ammonia from the unreacted gases/nitrogen and hydrogen	1
(d)	iron		1
(e)	Any two from:		
	M1 saves raw materials/resources	ALLOW stops raw materials/resources being wasted	2
	M2 uses less energy	ACCEPT saves energy	
	M3 to produce more ammonia / to improve yield (of ammonia)	ALLOW so recycled gases/nitrogen and hydrogen/they can be reacted again	
		IGNORE references to saves money	
(f) (i)	M1 350 (°C)	ACCEPT low temperature	1
	<b>M2</b> 400 (atm)	ACCEPT high pressure	1
		If numerical answers given units or indication of which is temp/pressure required	
(ii)	40 (%)	ACCEPT range 40-41 (%)	1
(iii)	the reaction does not reach equilibrium		1

	Total 11 marks
 compiled by examinent.com	

Question number	Answer	Notes	Marks
	M1 powder/crush the malachite (using the pestle and mortar)	ALLOW powder/crush the ore	6
	M2 add the malachite/powder to dilute sulfuric acid (in a beaker) OR add dilute sulfuric acid to the malachite (in a beaker)	ACCEPT mix the powder with dilute sulfuric acid (in a beaker)	
	M3 filter (using filter funnel and paper)	ALLOW decant	
	M4 add magnesium powder to the filtrate/solution/copper sulfate		
	M5 method to collect/obtain/ remove the residue/copper (using filter funnel and paper)		
	M6 reference to appropriate use of at least two pieces of apparatus	IGNORE any later steps e.g. washing / evaporation	

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Q	Answer	Notes	Mark
	If malachite and magnesium are both added to the acid at the same time, then:		
	M1 powder/crush the malachite (using the pestle and mortar)		
	M2 add the malachite/powder to dilute sulfuric acid and add the magnesium (in a beaker)		
	M3 filter and collect/obtain the residue/copper (using filter funnel and paper)	IGNORE any later steps e.g. washing / evaporation	
	M4 reference to appropriate use of at least two pieces of apparatus		

## Total for Question 11 = 6 marks

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#### $5.\ 4{\rm CH0\_1CR\_rms\_20170518}\ {\rm Q:}\ 5$

Question number	Answer	Notes	Marks
(a) (i)	add acid before magnesium	ORA	1
(ii)	a burette has a better resolution (than a measuring cylinder)	ALLOW greater accuracy (of data) ALLOW greater precision (of data)	1
(b)	Total volume of gas collected 30 100 120  M1 and M2 all points plotted correctly to the nearest gridline for both experiments  M3 suitable curve of best fit drawn for acid X	Deduct one mark for each incorrectly plotted point Missing (0,0) loses 1 mark only	4
	M4 suitable curve of best fit drawn for acid Y		

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Q	Answer	Notes	Mark
(c)	M1 Y (has the greater concentration)		2
	M2 (because) the curve (for acid Y) has a steeper slope/greater gradient (showing that the reaction is faster)  OR	M1 DEP M2	
	(because) it produces the larger volume of gas/more gas in the same time	OWTTE	
	<i>g</i> ,	Mark CSQ on candidate's labelling of their curves If no labelling assume steeper curve is acid Y	
(d)	M1 vertical line drawn to touch curve at t = 70 s  OR  horizontal line drawn to touch curve at t = 70 s		2
	M2 value read correctly from candidate's graph to nearest gridline	Expected value in range 16-17 (cm³)	
(e)	<b>M1</b> 17 (cm <sup>3</sup> )	ACCEPT value read correctly from candidate's graph to nearest gridline	2
	<b>M2</b> $(17 \div 30) = 0.57 \text{ (cm}^3/\text{s)}$	ACCEPT any number of sig figs e.g. 0.6, 0.567, 0.56 recurring	
		Mark M2 CSQ on M1	
		Total	12

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#### 6. 4ch1\_1c\_rms\_20230112 Q: 1

Question number	Answer	Notes	Marks
(a) (i)	particles should be close together and should fill from the bottom of the box, most particles should touch with a minimum of 2 random rows of particles	ALLOW particles filling the whole box IGNORE the size of the particles	1
		REJECT a regular arrangement	
(ii)	solid		1
(b)	solid to liquid melting		2
	solid to gas <b>sublimation</b>	ALLOW subliming	
(c)	An explanation that links the two points.		2
	M1 (particles / molecules have) more (kinetic) energy	ALLOW hot water has more (kinetic) energy	
		ALLOW (particles / molecules) move faster	
		IGNORE vibrate more	
	M2 can overcome / break the (intermolecular) forces/forces (between water molecules)	ALLOW can overcome / break the bonds (between water molecules) OR to break away from one another OR to escape more easily	
		IGNORE references to collisions, activation energy or rate of reaction	juestion = 6

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#### 7. $4ch1\_1cr\_rms\_20230112~Q:1$

Question number	Answer	Notes	Marks
(a)	X evaporating	ALLOW evaporation	3
	Y condensing	ALLOW condensation	
	Z freezing		
(b)	M1 solid particles vibrate about a fixed position	REJECT do not move	2
	M2 gas particles move randomly	ALLOW gas particles move rapidly/quickly/freely	
			Total 5

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#### 8. 4CH1\_1CR\_rms\_20220108 Q: 2

Question number	Answer	Notes	Marks
(a) (i)	(solute is) the substance/solid that dissolves (in a solvent) OWTTE		1
(ii)	(solvent is) the substance/liquid the solute/solid/substance dissolves in OWTTE		1
(b)	M1 (saturated solution) contains as much dissolved solute/solid/substance as possible OWTTE  M2 at a particular temperature		2
(c)	M1 process called diffusion		2
	M2 particles spread out (evenly throughout water/solution/liquid)	ALLOW particles move from area of high concentration to area of low concentration	

iotai	for Question $2 = 6$ mark
 compiled by examinent.com	

#### 9. 4CH1\_1C\_rms\_20210304 Q: 1

Question number	Answer		Notes	Marks
(a)			Award 1 mark for each	3
	Start	End	correct row	
	solid	liquid		
	solid	gas	<b>ALLOW</b> gas to solid for sublimation	
	gas	liquid		
	liquid	gas		
(b)	A description that refers to ar following points	y three of the		3
	M1 irregular /random arrange M2 large gaps between them	·	<b>ALLOW</b> spread out	
	spaced  M3 random movement / mov			
	M4 move (very) quickly	e n eely	<b>IGNORE</b> references to	
			kinetic energy	
				6 marks

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 $10.~4{\rm CH1\_1CR\_rms\_20200305}~~{\rm Q}{:}~2$ 

Question number	Answer	Notes	Marks
(a) (i)	Particles should be close together and should fill from the bottom of the box, some particles should touch	ALLOW particles filling the whole box IGNORE the size of the particles REJECT a regular arrangement	1
(ii)	Gas	ALLOW gaseous	1
(b)	M1 (water evaporates) l to g	ALLOW words for M1, M2 and M3	3
	M2 (crystals of iodine sublime) s to g		
	M3 (ice melts) s to l		
(c)	M1 (particles / molecules have) more energy	ALLOW water has more energy ALLOW (particles / molecules have) move faster IGNORE vibrate more	2
	M2 to overcome / break the forces (between water molecules)	ALLOW to overcome / break the bonds (between water molecules) OR to break away from one another OR so escape more easily	
		IGNORE references to collisions or activation energy	

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#### 11. 4CH0\_1C\_rms\_20190110 Q: 1

Question number	Answer	Notes	Marks
(a)	M1 melting		3
	M2 evaporation		
	M3 sublimation		
(b)	Any three from		3
	M1 (Arrangement of particles) irregular		
	M2 large gaps between them /far apart /widely spaced	ALLOW spread out	
	M3 random movement / move freely		
	M4 move (very) quickly	IGNORE references to kinetic energy	

Total for Question 1 = 6 marks
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12. 4CH1\_1CR\_rms\_20190517 Q: 1

Question number	Answer	Notes	Marks
a (i)	melting		1
(ii)	evaporation		1
(iii)	sublimation		1
b	A description that refers to three of the following points		
	M1 (particles) close together	<b>ALLOW</b> tightly packed/ touching	
	M2 (particles) regularly arranged	<b>ALLOW</b> arranged in a lattice	
		M1 and M2 can be scored from a diagram	3
	M3 (particles) do not move around	<b>ALLOW</b> do not move freely	
	M4 (particles) vibrate (about a fixed position)		
		IGNORE references to fixed shape and	
		volume	Total 6

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#### 13. 4CH0\_1C\_rms\_20180110 Q: 2

Question number	Answer			Notes	Marks
(a)					
	Change	Starting state	Finishing state		
	ice to water				
	solid iodine to iodine vapour	Z	Х	1 mark for each correct row	3
	molten iron to solid iron	Y	Z		
	ethene to (poly)ethene	Х	Z		
(b)	D (sublimation	)			1

	Total 4 marks
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14. 4CH0\_1C\_rms\_20180110 Q: 3

Question number	Answer	Notes	Marks
(a)	M1 (crystals) - get smaller	ACCEPT disappear IGNORE dissolve IGNORE reference to (incorrect) colours/loses colour IGNORE mass decreases	2
	M2 (water) - turns (from colourless to) purple	ALLOW pink IGNORE goes cloudy ALLOW (water) turns to colour of crystals REJECT other incorrect observations, e.g. fizzing, crystals change colour, only once in (a)	
(b)	C diffusion		1
(c)(i)	(water would change colour/go purple) more quickly	ALLOW change (in appearance) /it happens more quickly ALLOW (dissolves) more quickly IGNORE cloudy/incorrect colour ALLOW references to darker purple/colour with hot water ALLOW references to faster reaction IGNORE references to collisions	1
(c)(ii)	M1 particles/molecules/ions/they have more (kinetic) energy/are moving faster (in hot water)	ALLOW reverse argument in cold water	2
		If change is slower in (i) then ALLOW particles/molecules/ions have less (kinetic) energy/are moving slower	
	M2 particles/molecules/ions/they diffuse/spread more quickly	ALLOW particles/molecules/ions/they dissolve more quickly ALLOW more particles dissolve ALLOW references to more frequent collisions between water molecules and crystals	

		Total 6 marks
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