# Part 1 - Compulsory

Section A GCSE Review

This section should take approximately 2 hours to complete

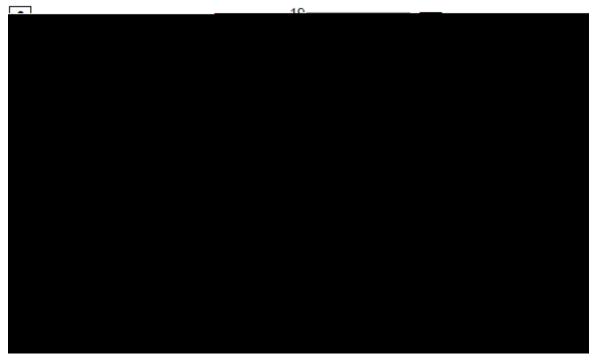
Below are a selection of exam questions on the following topics from your GCSEho1(r)10(GCS)3(E)1901 G[h)311(mis)15TQ1

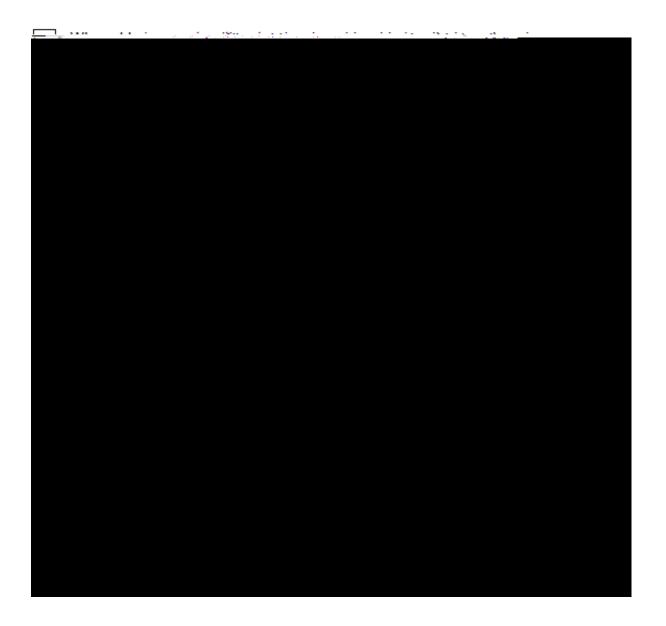
Paper: Jun18/8464/0/1HQ4.1-4.2

This question is about the halogens.

erature	1 Write the State symbol for chlorine at room femo [1]maris]
	Cl <sub>2</sub> ( )
ecule of fluorine.	2 Figure 4 represents one mol
str.) formas A. ron i	Consue of resolution of the second state of the second sec
<u></u>	
<u>1250</u>	

Paper: Jun18/8464/0/1HQ4.3-4.5





Paper: Jun18/8464/C/1H	Q6.	1,	6.2
------------------------	-----	----	-----

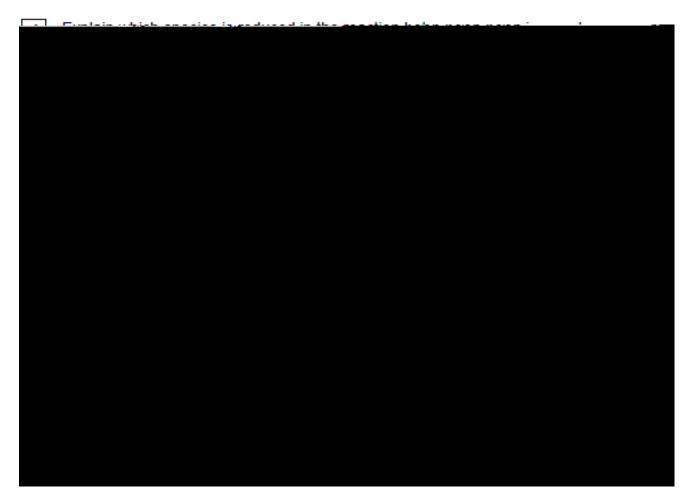
is heated. [2 marke]		he formula of e	each product w	hen calcium carb	onate (CaCO <sub>3</sub> )
3M0		. •			
n an			The sector	finn de mane a sur	ومودح ومكرور فالطعو
1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	517 <b>- 1</b> 14 (V-717)793	<u>ಕ್ಷಾಯಕ್ರ</u> ಾಣದ ನಿಜನವರಿಗಳು 	AND ADDRESS 1	8 6 50 <u>88</u> 900	
or c'historike	-ic : 12 - 4		<u></u>	• •• •• •	100 K. 8851
the relative atomic	mass (A.) of	the Group 2 m	etal in the met	al carbonate	Calculate
		Nameun	: Ciculo ži mela	R	
	[3.īmarks]]				
	· •	Galencia de 110	<u>nakén</u> (111	Madaðina aðar	
			Metal		

Paper: Jun18/8464/0/1HQ8.1-8.3



Paper: Jun18/8464/C/1H

# Q8.4



In an uncharged compound, the total number of + and charges must be exactly the same. You can use as many of the + and ions as necessary to work out the formula.

Example:

Magnesium sulfate : contains  $Mg^{2+}$ 

## Write and balance the following equations:

1. Sodium oxide and sulfuric acid

2. Calcium hydroxide and nitric acid

3. Sodium carbonate and phosphoric acid

4. Potassium and hydrochloric acid

5. Ammonia and sulfuric acid

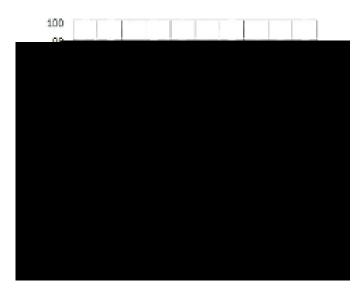
Mass spectrometry is a powerful instrument method of analysis. It can be used to find the mass and abundance of each isotope in an element allowing us to determine its relative atomic mass.

A common form of mass spectrometry is Time of Hight mass spectrometry.

### <u>Task 8</u>

### Answer the following questions.

1. Calculate the relative atomic mass of magnesium, using the mass spectrum below:



2. Slicon is a mixture of three isotopes with mass numbers 28, 29 and 30 with the relative abundances 92.18%, 4.70% and 3.12% respectively. Calculate the Ar to 1 decimal place.

3. The element indium exists as a mixture of two isotopes of mass numbers 113 and 115. The relative atomic mass of indium =114.82. Calculate the percentage of the two isotopes in a naturally occurring sample of indium.

One mole of anything contains 6.022 x 10

c) 39.0 g of Al(OH) $_3$ 

d) 1.00 tonne of NaCl

e) 20.0 mg of Qu(NO<sub>3</sub>)<sub>2</sub>

4. What is the mass of each of the following?

a) 5.00 moles of  $\ensuremath{\text{O}}_2$ 

b) 0.200 moles of  $AI_2O_3$ 

- c) 0.0100 moles of Ag
- d) 0.00200 moles of  $(NH_4)_2SO_4$

e) 0.300 moles of Na<sub>2</sub>OO<sub>3</sub>.10H<sub>2</sub>O

5.

# Part 2 Strongly Recommended

#### Significant figures

#### https://www.calculatorsoup.com/calculators/math/significant-figures-counter.php

Digits I, 2, 3, 4, 5, 6, 7, 8 & 9 are significant. Values containing a 0 in between any of these digits is also considered significant.

For example:

I2.45 has four significant figures

I2045 has five significant figures

Any 0s at the end of a number, to the right of the decimal point are significant.

For example:

I2.450 has five significant figures

Any 0s at the start of a number are not significant.

For example:

0.0l245 has four significant figures

Any 0s written at the end of a number are not significant if the number is written without a decimal point.

However, a 0 written at the end of a number with a decimal point is significant.

For example:

I2450 has four significant figures

I2450.0 has six significant figures

Task 3.

Complete the table by rounding the original number to the specified number of significant figures.

Original number	3 significant figures	2 significant figures	l significant figure
2.856			
44.503			
18.29			
0.099			
532.41			

## Sgnificant figures when completing calculations

It is important to show all workings and write each step in a calculation separately.

Calculated quantities should be

#### Decimal places

These are the number of digits (0, I, 2, 3, 4, 5, 6, 7, 8 or 9) shown to the right of the decimal point.

For example:

I.20 is written to two decimal places

0.024 is written to three decimal places

Task 5.

Complete the table by rounding the original number to the specified number of decimal places.

Original number	2 decimal places	l decimal place	0 decimal places (an Integer)
12.947			
84.3524			
0.765			

### Standard form

A number written in standard form shows a value (I, 2, 3, 4, 5, 6, 7, 8 or 9) in terms of a power of I0 (x I0<sup>a</sup>). The power of I0 (a) shows the number of places the decimal place must be moved to give the number in decimal form.

A positive value of a is used for values larger than one. A negative value of a is used for values smaller than one.

For example:

I25 is written as I.25 x  $I0^2$ 

0.00l25 is written as I.25 x 10<sup>-3</sup>

Task 6.

Convert the following numbers into standard form:

a)

# Rearranging equations

https://www.bbc.co.uk/bitesize/guides/zqpfcj6/revision/4

# Task 9.

# Complete the following conversions

a) Masses

#### Graphs

Drawing a graph of the results obtained usually makes it easier to interpret the data and draw conclusions.

The independent variable is shown on the x-axis and the dependent variable is shown on the y-axis.

Axes should always be labelled with the quantity being measured and the units.

time / seconds

Data points should be marked with a cross, x.

When choosing the scales consider:

the maximum and minimum values of each variable whether 0,0 should be included as a data point how to draw the axes without using difficult scale markings (e.g. multiples of 3, 7, etc) the data points should cover at least half of the grid supplied for the graph

- this may require you to use a false origin (i.e. start the axis above 0)

Consider the following when deciding where to draw a line of best fit:

the line can be straight or curved

the line should pass through, or very close to, the majority of plotted points (ignoring any anomalous points)

for points not on the line make sure that there are as many points on one side of the line as the other the line should be continuous and drawn with a sharp pencil (use a rule for a straight line)

You may be asked to use the graph to find a value and/or to calculate the gradient.

More information can be found at:

https://www.bbc.co.uk/bitesize/guides/z8fq6yc/revision/8 https://filestore.aqa.org.uk/resources/chemistry/AQA-7404-7405-PHBK.PDF (pages 48 - Figure 2.

(b) Use the graph to find the temperature of the metal block at time 100 s.

(c) The rate of change of temperature of the block is given by the gradient of the graph. Determine the gradient of the graph over the first 60 seconds.

**C**(1)