

THE PERIODIC TABLE

Period 1 2 3 4 5 6 7 0 Group

Period

1	H	1
	Hydrogen	

1	2	3	4	5	6	7	0											
1	Li Lithium 3	Be Beryllium 4					B Boron 5	He Helium 2										
2	Na Sodium 11	Mg Magnesium 12					C Carbon 6	N Nitrogen 7	O Oxygen 8	F Fluorine 9	Ne Neon 10							
3	K Potassium 19	Ca Calcium 20	Sc Scandium 21	Ti Titanium 22	V Vanadium 23	Cr Chromium 24	Mn Manganese 25	Fe Iron 26	Co Cobalt 27	Ni Nickel 28	Cu Copper 29	Zn Zinc 30	Ga Gallium 31	Ge Germanium 32	As Arsenic 33	Se Selenium 34	Br Bromine 35	Kr Krypton 36
4	Rb Rubidium 37	Sr Strontium 38	Y Yttrium 39	Zr Zirconium 40	Nb Niobium 41	Mo Molybdenum 42	Tc Technetium 43	Ru Ruthenium 44	Rh Rhodium 45	Pd Palladium 46	Ag Silver 47	Cd Cadmium 48	In Indium 49	Sn Tin 50	Sb Antimony 51	Te Tellurium 52	I Iodine 53	Xe Xenon 54
5	Cs Caesium 55	Ba Barium 56	La Lanthanum 57	Hf Hafnium 72	Ta Tantalum 73	W Tungsten 74	Re Rhenium 75	Os Osmium 76	Ir Iridium 77	Pt Platinum 78	Au Gold 79	Hg Mercury 80	Tl Thallium 81	Pb Lead 82	Bi Bismuth 83	Po Polonium 84	At Astatine 85	Rn Radon 86
6	Fr Francium 87	Ra Radium 88	Ac Actinium 89															

Key

Relative atomic mass
Symbol
Name
Atomic number



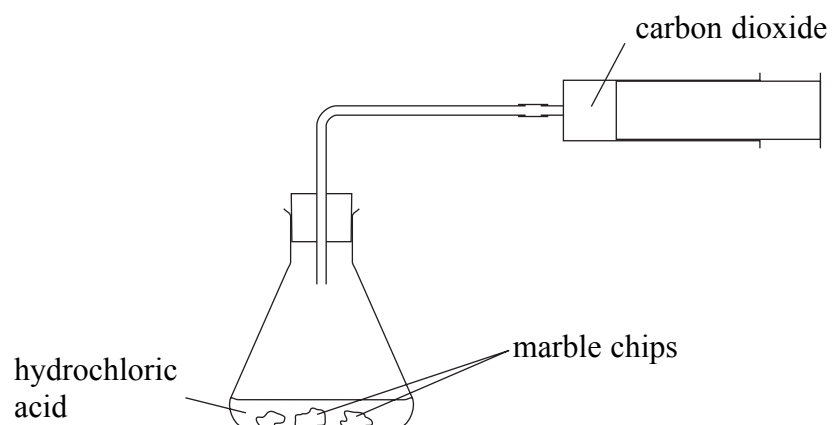
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TURN OVER FOR QUESTION 1



Answer ALL the questions. Write your answers in the spaces provided.

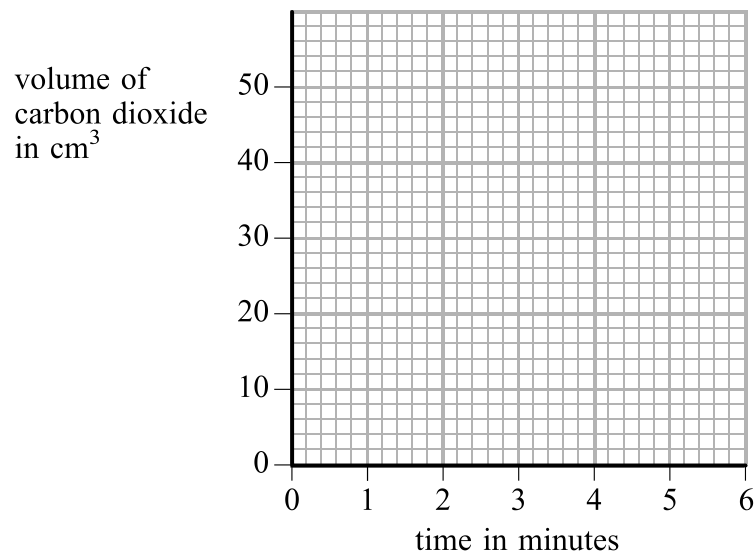
1. John investigated the rate of reaction between hydrochloric acid and marble chips. He used an excess of acid (25 cm^3). Every minute he recorded the total volume of carbon dioxide collected.



The results are shown in the table.

time (minutes)	0	1	2	3	4	5	6
volume of carbon dioxide (cm^3)	0	14	26	34	40	44	44

- (a) Draw a graph of these results on the grid.



(3)



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(b) John repeated his experiment under the same conditions but he used 50 cm³, instead of 25 cm³, of the hydrochloric acid.

What effect, if any, would this have on the rate of reaction?
Explain your answer.



.....
.....
.....

(3)

Q1

(Total 6 marks)

2. The table contains information about some elements in group 1.

element	atomic number	electron arrangement	melting point (°C)
lithium	3		181
sodium	11	2.8.1	98
potassium	19		63
rubidium		2.8.18.8.1	

(a) Fill in the four spaces in the table. (Your value for the melting point of rubidium should be an estimate.)

(4)

(b) Which of these elements is the most reactive?

.....

(1)

(c) Explain why all these elements react with water in a similar way.

.....
.....

(2)

(d) Calcium also reacts with water but is in group 2.

Explain why calcium is in group 2 rather than group 1.

.....
.....

(1)

Q2

(Total 8 marks)



3. This article is about a village that had to be moved because of a problem caused by methane gas.

The village that moved

One day a resident in the village noticed a strange blue flame in the fireplace of her home. It was confirmed that methane gas was leaking into homes from an old mine, making the village unsafe. A new village was built nearby and 400 people moved into new homes. A tall chimney marks the site of the old village. At the top of the chimney the methane from the old mine is burned safely.



- (a) (i) What evidence is there in the article that complete combustion of methane was taking place in the fireplace?

..... (1)

- (ii) Write the balanced equation for the complete combustion of methane.

..... (3)



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(b) Draw the structure of a methane molecule, showing all bonds.

(1)

(c) Every day, methane from old mines escapes into the atmosphere or is burnt off to form carbon dioxide.

Suggest why some scientists are concerned about this.

.....
.....

(1)

(d) Incomplete combustion of methane produces carbon monoxide.

(i) What causes incomplete combustion?

.....

(1)

(ii) Why is carbon monoxide dangerous?

.....

(1)

Q3

(Total 8 marks)



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4. Janet added bromine water to a sample of a hydrocarbon. A reaction occurred and the orange colour of the bromine was immediately removed.

(a) What does this tell you about the hydrocarbon?

.....
(1)

(b) One hydrocarbon that reacts in this way is propene, C_3H_6 .

(i) Draw the structure of a propene molecule, showing all bonds.

(1)

(ii) Write the balanced equation for the reaction of propene with bromine.

.....
(2)

(c) Two processes are needed to obtain propene from crude oil.

(i) Name these processes in the order in which they are carried out.

process 1

process 2
(2)

(ii) State the conditions used in industry to carry out process 2.

.....
.....
.....
(2)

Q4

(Total 8 marks)

TOTAL FOR PAPER: 30 MARKS

END

