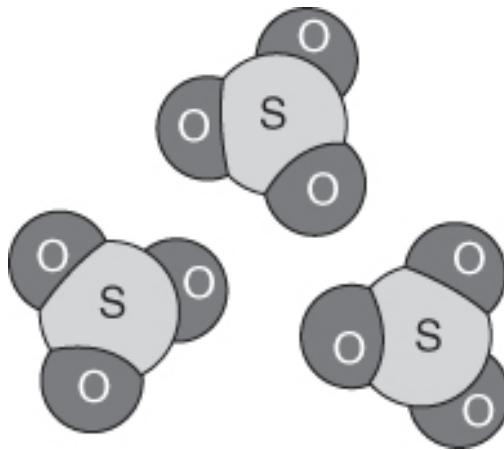


Name _____ Class _____ Date _____

1 In the space below, draw a diagram of a methane molecule, which has the formula of CH_4 .

(Total for Question 1 = 2 marks)

2 (a) Give the formula for the oxide of sulfur shown in the diagram.



(1)

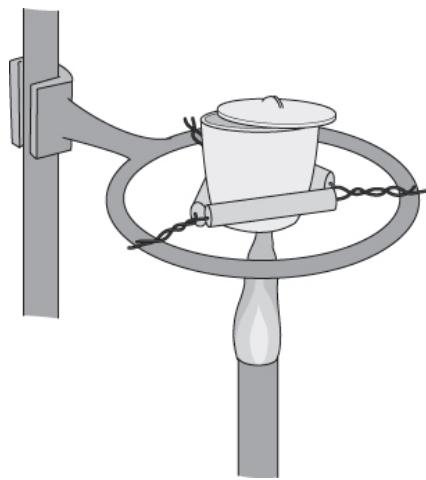
(b) 4 g of sulfur reacts completely with 6 g of oxygen to form this oxide of sulfur.
Calculate the mass of sulfur needed to produce 30 g of the oxide.

(2)

(Total for Question 2 = 3 marks)

3 A class is asked to measure the increase in mass when a 1g piece of magnesium is burned using the apparatus in the diagram.

Class results	
Group	Increase in mass (g)
1	0.19
2	0.22
3	0.23
4	0.22
5	0.02
6	0.24



(a) Name the compound formed when magnesium burns in air.

(1)

(b) Identify the anomalous result in the table and give **one** reason for your choice.

(2)

(c) Calculate the mean increase in mass in grams for this set of results. Clearly explain what you will do with any anomalous results.

(2)

(d) Use Dalton's atomic theory to explain the increase in mass.

(1)

(Total for Question 3 = 6 marks)

4 Dmitri Mendeleev published his ideas about classifying elements in 1869. His first periodic table is shown below.

	Ti = 50	Zr = 90	? = 180
	V = 51	Nb = 94	Ta = 182
	Cr = 52	Mo = 96	W = 186
	Mn = 55	Rh = 104,4	Pt = 197,4
	Fe = 56	Ru = 104,4	Ir = 198
	Ni = Co = 59	Pd = 106,6	Os = 199
H = 1	Cu = 63,4	Ag = 108	Hg = 200
Be = 9,4	Zn = 65,2	Cd = 112	
B = 11	? = 68	Ur = 116	Au = 197?
C = 12	? = 70	Sn = 118	
N = 14	P = 31	Sb = 122	Bi = 210?
O = 16	S = 32	Te = 128?	
F = 19	Cl = 35	Br = 80	I = 127
Li = 7 Na = 23	K = 39	Rb = 85,4	Cs = 133
	Ca = 40	Sr = 87,6	Ba = 137
	? = 45	Ce = 92	Tl = 204
	?Er = 56	La = 94	Pb = 207
	?Yt = 60	Di = 95	
	?In = 75,6	Th = 118?	

(a) Give the symbols and names for **two** halogens in the table.

(2)

(b) Give **one** reason why Mendeleev arranged the elements in groups.

(1)

(Total for Question 4 = 3 marks)

5 An outline of a modern periodic table is shown below.

(a) Which of the elements are non-metals? Tick **one** box.

A (i) and (ii)

B (iii), (iv) and (vi)

C (iii), (iv) and (v)

D (i), (ii) and (vi)

(1)

(b) Which elements are in group 0? Tick **one** box.

- A** (i) and (ii)
- B** (iii)
- C** (iv) and (v)
- D** (vi)

(1)

(c) State which of elements (iv) and (v) in the table is the more reactive. Give **one** reason for your answer.

(8)

(Total for Question 5 = 4 marks)

6 (a) Complete the word equation for the reaction between sodium and water.

sodium + water → _____ + _____
(2)

(b) Describe what you would observe if you added a piece of sodium to water.

(1)

(Total for Question 6 = 3 marks)

7 Zinc oxide is a base.

(a) Name the type of reaction that occurs between zinc oxide and hydrochloric acid.

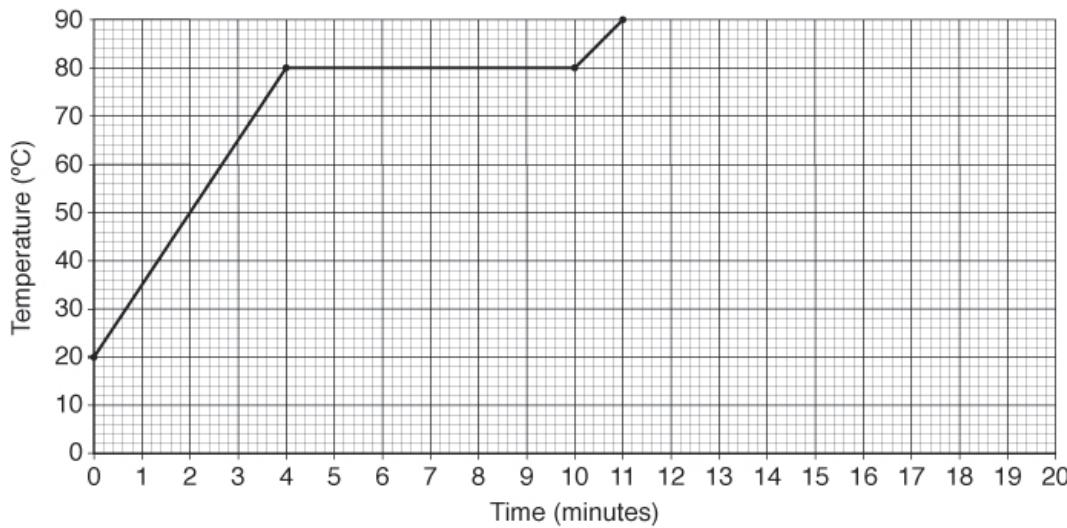
(1)

(b) Name the salt produced in the reaction between zinc oxide and hydrochloric acid.

(1)

(Total for Question 7 = 2 marks)

8 The graph shows how the temperature of metal X changed over time as it was heated constantly.



Explain the shape of the graph.

(Total for Question 8 = 2 marks)