

GCSE Chemistry A (Gateway Science)
J248/03 C1-C3 and C7 Higher (Higher Tier)

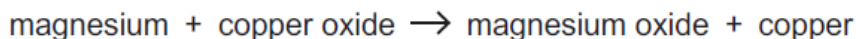
Question Set 3

Multiple Choice Questions

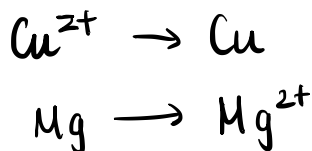
C3: Chemical Reactions

1 Magnesium reacts with copper oxide.

Magnesium oxide and copper are made.



Which substance is the **reducing agent**?



- A Copper
- B Copper oxide
- C Magnesium
- D Magnesium oxide

Your answer

C

[1]

2 Avogadro's constant has a value of 6.02×10^{23} .

How many **oxygen atoms** are in 0.25 moles of oxygen molecules?

- A 1.204×10^{24}
- B 1.505×10^{23}
- C 3.010×10^{23}
- D 6.020×10^{23}

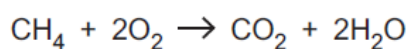
$$\begin{array}{l} \text{O}_2 \\ \swarrow \\ 0.25 \times 6.02 \times 10^{23} \times 2 \\ = 3.01 \times 10^{23} \end{array}$$

Your answer

C

[1]

3 Methane burns in oxygen to form carbon dioxide and water.



Calculate the amount of carbon dioxide made when 6.4 g of methane is burnt.

- A 2.8 g
 - B 4.4 g
 - C 14.4 g
 - D 17.6 g
- $$\begin{array}{l} 6.4 \quad 17.6 \\ \text{RFM} = 16 \quad 44 \\ \text{mole} = 0.4 \quad 0.4 \\ 1 : 1 \end{array}$$

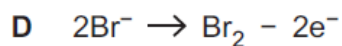
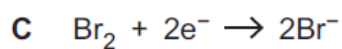
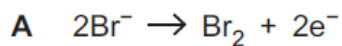
Your answer

D

[1]

4 During the electrolysis of molten lead bromide, bromine is made at the anode.

Which half equation shows that bromine is made at the anode?



Your answer

A

[1]

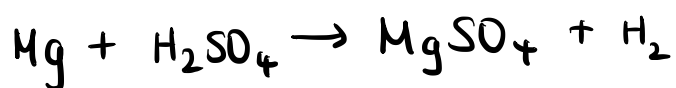
5 What is the name of the gas made when magnesium reacts with sulfuric acid?

A Carbon dioxide

B Carbon monoxide

C Hydrogen

D Oxygen

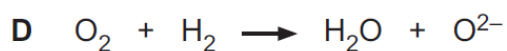
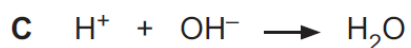
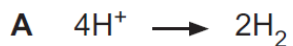


Your answer

C

[1]

6 Which equation represents **neutralisation**?



Your answer

C

[1]

7 Look at the equation.



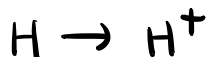
Which substance is the **oxidising agent** in this reaction?

A CH_4

B CO_2

C H_2O

D O_2



Your answer

D

[1]

8 What is the **activation energy** for a reaction?

A The difference between the energy of the reactants and the products

B The energy needed for a reaction to start

C The energy of the products

D The energy of the starting materials

Your answer

B

[1]

9 Which is the **best** explanation of a **concentrated** acid?

A The acid is completely ionised in solution in water.

B The acid is partially ionised in solution in water.

C There is a large amount of acid and a small amount of water.

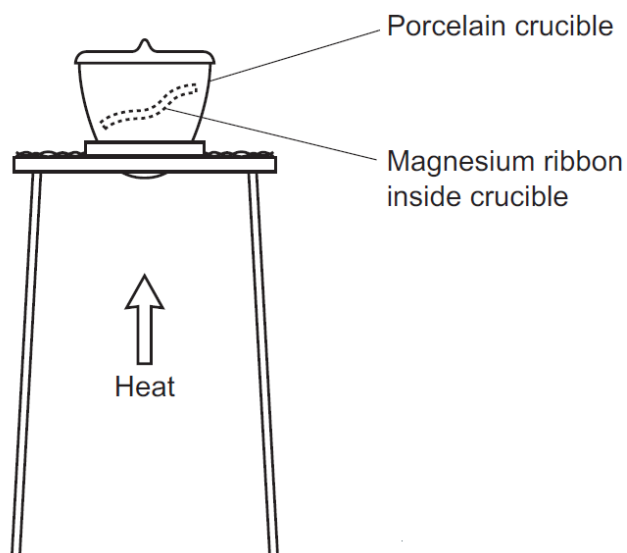
D There is a large amount of water and a small amount of acid.

Your answer

C

[1]

10 Magnesium is heated in a crucible.



The mass of the crucible and magnesium **increases**.

Which statement is the **best** explanation for this?

- A Oxygen is given off.
- B The magnesium melts.
- C The magnesium is oxidised to magnesium oxide.
- D The magnesium reacts to make magnesium carbonate.

Your answer

C

[1]

11 The equation shows a reaction that involves both oxidation and reduction.



Which statement about **reduction** is correct?

- A The gain of oxygen and the gain of electrons by a substance
- B The gain of oxygen and the loss of electrons by a substance
- C The loss of oxygen and the gain of electrons by a substance
- D The loss of oxygen and the loss of electrons by a substance

Your answer

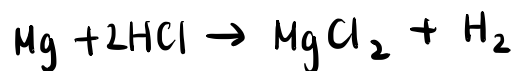
C

[1]

12 A student measures the pH of an acid and an alkali.

He adds magnesium metal to the acid and to the alkali.

What results should he expect?



	Acid		Alkali	
	pH	Reaction with magnesium	pH	Reaction with magnesium
A	below 7	no reaction	above 7	magnesium fizzes
B	below 7	magnesium fizzes	above 7	no reaction
C	above 7	magnesium fizzes	above 7	no reaction
D	above 7	no reaction	below 7	magnesium fizzes

Your answer

C

[1]

13 During the electrolysis of molten potassium chloride, what is made at the cathode?

- A Chlorine
- B Hydrogen
- C Potassium
- D Potassium hydroxide

Your answer

A

[1]

14 Which of these shows the balanced symbol equation for the reaction between potassium and chlorine to make potassium chloride?

- A $\text{K} + \text{Cl}_2 \rightarrow \text{KCl}_2$
- B $\text{P} + \text{Cl}_2 \rightarrow \text{PCl}_2$
- C $2\text{K} + \text{Cl}_2 \rightarrow 2\text{KCl}$
- D $2\text{P} + \text{Cl}_2 \rightarrow 2\text{PCl}$

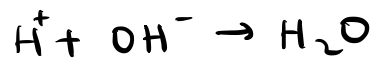
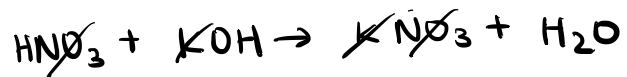
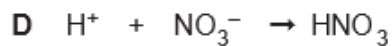
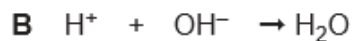
Your answer

C

[1]

15 A student neutralises nitric acid with potassium hydroxide solution.

Which equation shows the **ionic** equation for neutralisation?



Your answer

B

[1]

16 A student investigates some acids.

She has a solution of hydrochloric acid of concentration 0.01 mol/dm^3 .

This solution has a pH of 2.

She increases the concentration of hydrochloric acid from 0.01 mol/dm^3 to 0.1 mol/dm^3 .

What is the pH of this new solution?

A 0

B 1

C 3

D 12

Your answer

B

[1]

17 What is the **best** explanation of what is meant by a strong acid?

A There is a large amount of acid and a small amount of water.

B There is a small amount of acid and a large amount of water.

C The acid is completely ionised in solution in water.

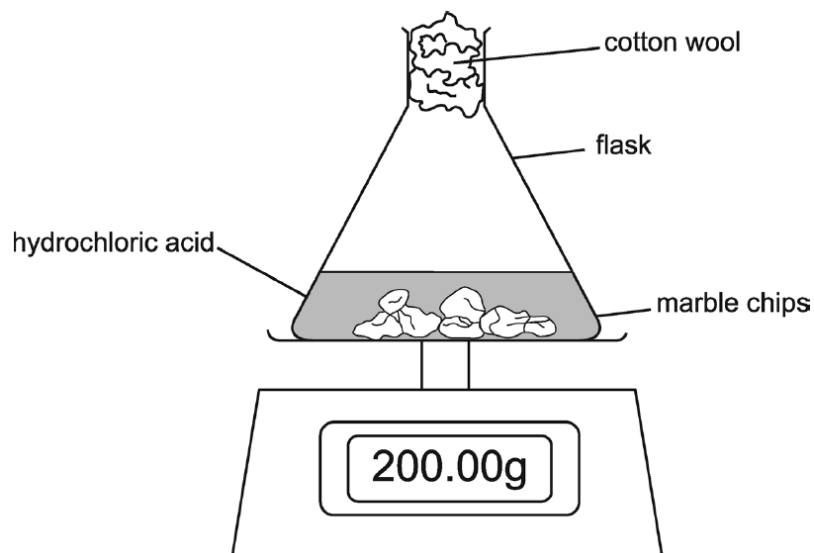
D The acid is partially ionised in solution in water.

Your answer

C

[1]

18 Look at the diagram.



It shows how the reaction between hydrochloric acid and marble chips (calcium carbonate) can be monitored.

The reading on the balance **decreases** during the reaction.

Which statement is the **best** explanation?

- A Acid escapes from the flask.
- B Carbon dioxide gas is made which leaves the flask.
- C Hydrogen gas is made which leaves the flask.
- D The temperature in the laboratory changes.

Your answer

B

[1]

Total Marks for Question Set 3: 18

The Periodic Table of the Elements

(1)	(2)											(3)	(4)	(5)	(6)	(7)	(8)			
		Key																		
		atomic number Symbol name relative atomic mass																		
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			
1	2											5	6	7	8	9				
1	4	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36			
H hydrogen 1.0	Be beryllium 9.0	Sc scandium 45.0	Ti titanium 47.9	V vanadium 50.9	Cr chromium 52.0	Mn manganese 54.9	Fe iron 55.8	Co cobalt 58.9	Ni nickel 58.7	Cu copper 63.5	Zn zinc 65.4	B boron 10.8	C carbon 12.0	N nitrogen 14.0	O oxygen 16.0	F fluorine 19.0	Ne neon 20.2			
3	12	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54			
Li lithium 6.9	Mg magnesium 24.3	Y yttrium 88.9	Zr zirconium 91.2	Nb niobium 92.9	Mo molybdenum 95.9	Tc technetium	Ru ruthenium 101.1	Rh rhodium 102.9	Pd palladium 106.4	Ag silver 107.9	Cd cadmium 112.4	Al aluminium 27.0	Si silicon 28.1	P phosphorus 31.0	S sulfur 32.1	Cl chlorine 35.5	Ar argon 39.9			
11	20	37	38	73	74	75	76	77	78	79	80	81	82	83	84	85	86			
Na sodium 23.0	K potassium 39.1	Rb rubidium 85.5	Sr strontium 87.6	Ta tantalum 180.9	W tungsten 183.8	Re rhenium 186.2	Os osmium 190.2	Ir iridium 192.2	Pt platinum 195.1	Au gold 197.0	Hg mercury 200.6	Tl thallium 204.4	Pb lead 207.2	Bi bismuth 209.0	Po polonium	At astatine	Rn radon			
19	37	55	56	72	73	74	76	77	78	79	80	81	82	83	84	85	86			
K potassium 39.1	Rb rubidium 85.5	Cs caesium 132.9	Ba barium 137.3	Hf hafnium 178.5	Ta tantalum 180.9	W tungsten 183.8	Os osmium 190.2	Ir iridium 192.2	Pt platinum 195.1	Au gold 197.0	Hg mercury 200.6	Tl thallium 204.4	Pb lead 207.2	Bi bismuth 209.0	Po polonium	At astatine	Rn radon			
37	55	87	88	104	105	106	108	109	110	111	112	113	114	115	116	117	118			
Rb rubidium 85.5	Cs caesium 132.9	Fr francium	Ra radium	Rf rutherfordium	Db dubnium	Sg seaborgium	Hs hassium	Mt meitnerium	Ds darmstadtium	Rg roentgenium	Cn copernicium	Fl flerovium	Lv livermorium	Ts tennessine	Og oganeson					

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