Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Balancing equations

Time allowed: 15 minutes

Subject code **0620**

Chemistry

Questions from Paper 1 and Paper 2

You must have: a soft pencil, an eraser and a pen.

Total marks

/ 10

Instructions

- There are 10 questions. Each has four options: A, B, C and D.
- Choose one option for each question and record it as your teacher directs.
- If you change a choice, rub out the first one completely.

Information

- This paper has 10 questions worth 10 marks in total.

Advice

- Read every question through once before you write anything.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

1 Sodium burns in oxygen to form sodium oxide.

What is the balanced equation for the reaction?

A $4Na + 2O \rightarrow 2Na_2O$

B $4Na + O_2 \rightarrow 2Na_2O$

C $2Na_2 + O_2 \rightarrow 2Na_2O$

D $2Na_2 + 2O \rightarrow 2Na_2O$

Chemical formulae and equations Click for more variations

Answer B

2 What is the equation for the reaction between calcium and chlorine?

A $2Ca + Cl \rightarrow Ca_2Cl$

B $2Ca + Cl_2 \rightarrow Ca_2Cl_2$

C $Ca + Cl \rightarrow CaCl$

D $Ca + Cl_2 \rightarrow CaCl_2$

Chemical formulae and equations Click for more variations

Answer D

3 Methane, CH_4, burns in air to form carbon dioxide and water.

What is the balanced equation for this reaction?

A $CH_4(g) + O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$

B $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$

C $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + H_2O(g)$

D $CH_4(g) + 3O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$

Chemical formulae and equations Click for more variations

Answer B

4 Which equation represents the reaction of magnesium with dilute hydrochloric acid?

A $Mg(s) + 2HCl(aq) \rightarrow MgCl_2(aq) + H_2(g)$

B $Mg(s) + 2HCl(l) \rightarrow MgCl_2(s) + H_2(g)$

C $2Mg(s) + 2HCl(aq) \rightarrow 2MgCl(aq) + H_2(g)$

D $2Mg(s) + 2HCl(l) \rightarrow 2MgCl(s) + H_2(g)$

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Answer A

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5 Carbon dioxide gas reacts with aqueous calcium hydroxide to form calcium carbonate.

Which equation represents this reaction?

A $CO_2(g) + Ca(OH)_2(aq) \rightarrow CaCO_3(s) + H_2O(l)$

B $CO_2(g) + Ca(OH)_2(aq) \rightarrow CaCO_3(aq) + H_2O(l)$

C $2CO_2(g) + 2CaOH(aq) \rightarrow 2CaCO_3(s) + H_2(g)$

D $2CO_2(g) + 2CaOH(aq) \rightarrow 2CaCO_3(aq) + H_2(g)$

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Answer A

6 Aluminium reacts with iron(III) oxide to form aluminium oxide and iron.

Which chemical equation for the reaction between aluminium and iron(III) oxide is correct?

A $Al + FeO \rightarrow AlO + Fe$

B $2Al + Fe_2O \rightarrow Al_2O + 2Fe$

C $Al + Fe_2O_3 \rightarrow Al_2O_3 + Fe$

D $2Al + Fe_2O_3 \rightarrow Al_2O_3 + 2Fe$

Chemical formulae and equations Click for more variations

Answer D

7 Which equation for the decomposition of calcium nitrate is correct?

A $Ca(NO_3)_2 \rightarrow CaO + NO_2 + O_2$

B $Ca(NO_3)_2 \rightarrow CaO + 2NO_2 + O_2$

C $2Ca(NO_3)_2 \rightarrow 2CaO + 2NO_2 + O_2$

D $2Ca(NO_3)_2 \rightarrow 2CaO + 4NO_2 + O_2$

Chemical formulae and equations Click for more variations

Answer D

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8 Aluminium reacts with fluorine.

$$x\mathrm{A}l(\mathrm{s}) + y\mathrm{F}_2(\mathrm{g}) \rightarrow z\mathrm{A}l\mathrm{F}_3(\mathrm{s})$$

Which values of *x*, *y* and *z* balance the equation?

	x	*y*	*z*
A	1	2	1
B	2	3	2
C	3	2	3
D	4	3	4

Chemical formulae and equations Click for more variations

Answer B

9 The equation for the reaction between phosphorus and oxygen is shown.

$$x\mathrm{P}_4 + y\mathrm{O}_2 \rightarrow z\mathrm{P}_2\mathrm{O}_5$$

Which values of *x*, *y* and *z* balance the equation?

	x	*y*	*z*
A	1	5	2
B	1	10	2
C	2	5	2
D	2	10	1

Chemical formulae and equations Click for more variations

Answer A

10 Calcium phosphate forms when calcium chloride and sodium phosphate solutions react together.

$$x\ \mathrm{CaC}l_2 + y\ \mathrm{Na_3PO_4} \rightarrow 2\mathrm{Ca_3(PO_4)_2} + 12\mathrm{NaC}l$$

Which values of *x* and *y* balance the equation?

	x	*y*
A	2	2
B	3	4
C	6	3
D	6	4

Chemical formulae and equations Click for more variations

Answer D

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Answer key

1	B
2	D
3	B
4	A
5	A
6	D
7	D
8	B
9	A
10	D

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