Stoichiometry – 2019 June

1. 0620/11,12,13/M/J/19/No.9

The compound magnesium nitrate has the formula $Mg(NO_3)_2$.

What is the relative formula mass of magnesium nitrate?

A 86 **B** 134 **C** 148 **D** 172

2. 0620/21/M/J/19/No.7

Propane burns in oxygen.

$$C_3H_8 + xO_2 \rightarrow 3CO_2 + yH_2O$$

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

	x	*y*
A	5	4
B	7	4
C	10	8
D	13	8

3. 0620/21/M/J/19/No.8

A tablet contains 0.080 g of ascorbic acid (M_r = 176).

What is the concentration of ascorbic acid when one tablet is dissolved in 200 cm^3 of water?

A 9.1×10^{-5} mol / dm^3

B 4.5×10^{-4} mol / dm^3

C 9.1×10^{-2} mol / dm^3

D 2.3×10^{-3} mol / dm^3

4. 0620/22/M/J/19/No.7

Calcium metal reacts with water to form a solution of calcium hydroxide and hydrogen gas.

Which equation is correct?

A $Ca(s) + H_2O(aq) \rightarrow CaOH(aq) + H(g)$

B $Ca(s) + 2H_2O(aq) \rightarrow Ca(OH)_2(s) + 2H_2(g)$

C $Ca(s) + 2H_2O(l) \rightarrow Ca(OH)_2(aq) + H_2(g)$

D $Ca(s) + H_2O(l) \rightarrow CaOH(l) + H(g)$

5. 0620/22/M/J/19/No.8

$25.0\,cm^3$ of $0.100\,mol/dm^3$ aqueous sodium hydroxide is neutralised by $24.6\,cm^3$ of dilute sulfuric acid.

What is the concentration of the dilute sulfuric acid?

A $0.0508\,mol/dm^3$

B $0.0984\,mol/dm^3$

C $0.102\,mol/dm^3$

D $0.203\,mol/dm^3$

6. 0620/23/M/J/19/No.7

When propane burns in air, carbon dioxide and water are formed.

What is the chemical equation for this reaction?

A $C_3H_8 + 2O_2 \rightarrow CO_2 + 2H_2O$

B $C_3H_8 + 3O_2 \rightarrow 3CO_2 + H_2O$

C $C_3H_8 + 4O_2 \rightarrow 3CO_2 + 4H_2O$

D $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

7. 0620/23/M/J/19/No.8

What is the concentration of a solution that contains 25.0 g NaOH in 500 cm^3 of water?

A 0.125 mol / dm^3

B 0.800 mol / dm^3

C 1.25 mol / dm^3

D 3.20 mol / dm^3

8. 0620/12/F/M/19/No.9

The relative formula mass, M_r, of calcium carbonate, $CaCO_3$, is 100.

What is the mass of carbon present in 100 g of calcium carbonate?

A 12 g **B** 36 g **C** 40 g **D** 60 g

9. 0620/22/F/M/19/No.8

An oxide of nitrogen has the following composition by mass: N, 30.4%; O, 69.6%.

It has a relative molecular mass of 92.

What is the molecular formula of the oxide of nitrogen?

A NO **B** NO_2 **C** NO_4 **D** N_2O_4

10. 0620/22/F/M/19/No.9

Calcium carbonate reacts with dilute hydrochloric acid according to the equation shown.

$$CaCO_3 + 2HCl \rightarrow CaCl_2 + CO_2 + H_2O$$

10 g of calcium carbonate is reacted with 100 cm^3 of 1 mol/dm^3 hydrochloric acid.

The following statements are made.

1 1.2 dm^3 of carbon dioxide is formed.

2 5.6 g of calcium chloride is formed.

3 4.8 g of carbon dioxide is formed.

4 No calcium carbonate is left when the reaction is completed.

Which statements about the reaction are correct?

A 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4