

Stoichiometry – 2019 June

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

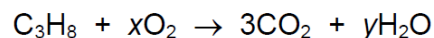
The compound magnesium nitrate has the formula $\text{Mg}(\text{NO}_3)_2$.

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.



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 $9.1 \times 10^{-5} \text{ mol/dm}^3$
B $4.5 \times 10^{-4} \text{ mol/dm}^3$
C $9.1 \times 10^{-2} \text{ mol/dm}^3$
D $2.3 \times 10^{-3} \text{ mol/dm}^3$

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 $\text{Ca(s)} + \text{H}_2\text{O(aq)} \rightarrow \text{CaOH(aq)} + \text{H(g)}$
- B $\text{Ca(s)} + 2\text{H}_2\text{O(aq)} \rightarrow \text{Ca(OH)}_2\text{(s)} + 2\text{H}_2\text{(g)}$
- C $\text{Ca(s)} + 2\text{H}_2\text{O(l)} \rightarrow \text{Ca(OH)}_2\text{(aq)} + \text{H}_2\text{(g)}$
- D $\text{Ca(s)} + \text{H}_2\text{O(l)} \rightarrow \text{CaOH(l)} + \text{H(g)}$

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

25.0 cm³ of 0.100 mol/dm³ aqueous sodium hydroxide is neutralised by 24.6 cm³ of dilute sulfuric acid.

What is the concentration of the dilute sulfuric acid?

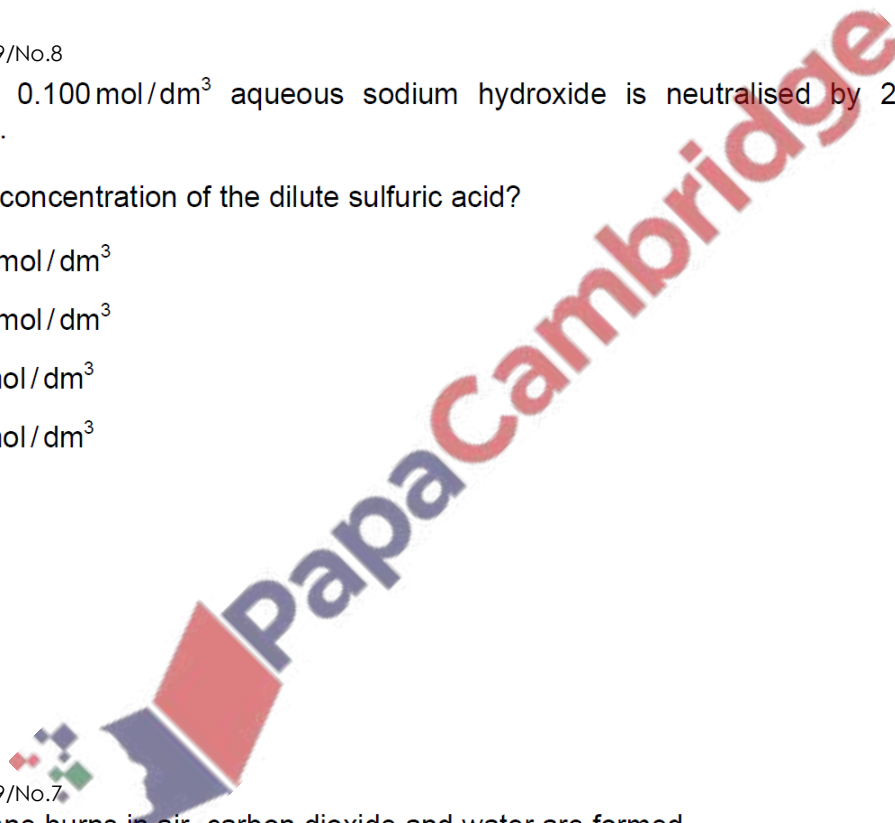
- A 0.0508 mol/dm³
- B 0.0984 mol/dm³
- C 0.102 mol/dm³
- D 0.203 mol/dm³

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 $\text{C}_3\text{H}_8 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
- B $\text{C}_3\text{H}_8 + 3\text{O}_2 \rightarrow 3\text{CO}_2 + \text{H}_2\text{O}$
- C $\text{C}_3\text{H}_8 + 4\text{O}_2 \rightarrow 3\text{CO}_2 + 4\text{H}_2\text{O}$
- D $\text{C}_3\text{H}_8 + 5\text{O}_2 \rightarrow 3\text{CO}_2 + 4\text{H}_2\text{O}$



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

What is the concentration of a solution that contains 25.0 g NaOH in 500 cm³ of water?

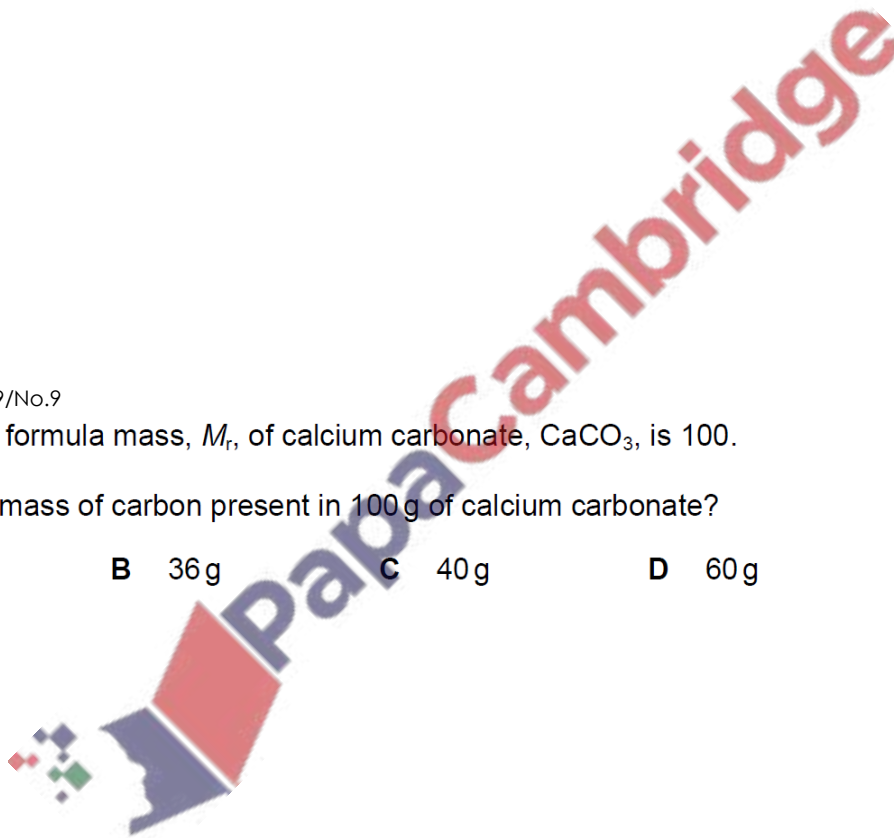
- A 0.125 mol/dm³
- B 0.800 mol/dm³
- C 1.25 mol/dm³
- D 3.20 mol/dm³

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

The relative formula mass, M_r , of calcium carbonate, CaCO₃, 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%.

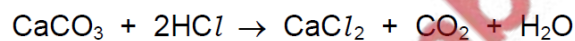
It has a relative molecular mass of 92.

What is the molecular formula of the oxide of nitrogen?

- A NO B NO₂ C NO₄ D N₂O₄

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

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



10 g of calcium carbonate is reacted with 100 cm³ of 1 mol/dm³ hydrochloric acid.

The following statements are made.

- 1 1.2 dm³ 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