

## Unit 2: Atoms, molecules and stoichiometry

### Subunit 2.4: Reacting masses and volumes (solutions and gases)

#### Topical Question No: 1

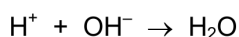
- 17 In an experiment, 0.600 mol of chlorine gas,  $\text{Cl}_2$ , is reacted with an excess of hot aqueous sodium hydroxide. One of the products is  $\text{NaClO}_3$ .

Which mass of  $\text{NaClO}_3$  is formed?

- A 21.3 g      B 44.7 g      C 63.9 g      D 128 g

#### Topical Question No: 2

- 6 Sodium hydroxide neutralises acid.



In a  $11\,000\text{ dm}^3$  sample of an aqueous solution, the concentration of acid,  $[\text{H}^+]$ , is  $1.26 \times 10^{-3} \text{ mol dm}^{-3}$ .

Which mass of solid sodium hydroxide neutralises the acid?

- A 0.0214 g      B 0.0504 g      C 236 g      D 554 g

#### Topical Question No: 3

- 25 Which volume of hydrogen, measured under room conditions, is produced when 0.160 g of methanol reacts with an excess of sodium?

- A  $60\text{ cm}^3$       B  $120\text{ cm}^3$       C  $240\text{ cm}^3$       D  $480\text{ cm}^3$

#### Topical Question No: 4

- 2 A 3.7 g sample of copper(II) carbonate is added to  $25\text{ cm}^3$  of  $2.0\text{ mol dm}^{-3}$  hydrochloric acid.

Which volume of gas is produced under room conditions?

- A  $0.60\text{ dm}^3$       B  $0.72\text{ dm}^3$       C  $1.20\text{ dm}^3$       D  $2.40\text{ dm}^3$

#### Topical Question No: 5

- 27 Use of the Data Booklet is relevant to this question.

Which volume of oxygen, at room temperature and pressure, is needed for complete combustion of 0.1 mol of ethanol?

- A  $7.2\text{ dm}^3$       B  $8.4\text{ dm}^3$       C  $14.4\text{ dm}^3$       D  $16.8\text{ dm}^3$

*Topical Question No: 6*

**18** *Use of the Data Booklet is relevant to this question.*

A chemist took  $2.00\text{ dm}^3$  of nitrogen gas, measured under room conditions, and reacted it with a large volume of hydrogen gas, in order to produce ammonia. Only 15.0% of the nitrogen gas reacted to produce ammonia.

What mass of ammonia was formed?

- A** 0.213 g      **B** 0.425 g      **C** 1.42 g      **D** 2.83 g

*Topical Question No: 7*

**9** *Use of the Data Booklet is relevant to this question.*

In an experiment,  $12.0\text{ dm}^3$  of oxygen, measured under room conditions, is used to burn completely 0.10 mol of propan-1-ol.

What is the final volume of gas, measured under room conditions?

- A**  $7.20\text{ dm}^3$       **B**  $8.40\text{ dm}^3$       **C**  $16.8\text{ dm}^3$       **D**  $18.00\text{ dm}^3$

## **Answer Key**

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