

AQA – Amount of substance – AS Chemistry P2

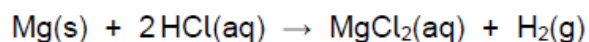
1. No.5

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This question is about the volumes of gases involved in some reactions.

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Magnesium reacts with hydrochloric acid.

0.400 g of magnesium is added to 20.0 cm³ of 1.50 mol dm⁻³ hydrochloric acid.

Identify the limiting reagent.

Justify your answer.

Calculate the volume, in m³, of hydrogen produced at 101 kPa and 15 °CThe gas constant, $R = 8.31 \text{ J K}^{-1} \text{ mol}^{-1}$ **[7 marks]**

Limiting Reagent _____

Justification _____

Volume of hydrogen _____ m³

0 5 . 2 Propane (C_3H_8) undergoes complete combustion in a plentiful supply of oxygen.

Give an equation for the complete combustion of propane.

Use this equation to calculate the minimum volume, in cm^3 , of oxygen gas needed for the complete combustion of 50 cm^3 of propane gas.

Assume that the volumes of both gases are measured at the same temperature and pressure.

[2 marks]

Equation for combustion

Volume of oxygen gas _____ cm^3

2. No.8

The equation shows how **P** reacts with **Q** to make **R** and **S**.



When a mixture of 0.25 mol of **P** and 0.40 mol of **Q** react, 0.15 mol of **R** is obtained.

What is the percentage yield of **R** in this reaction?

[1 mark]

A $\frac{0.15}{0.20} \times 100$

☐

B $\frac{0.15}{0.25} \times 100$

☐

C $\frac{0.15}{0.40} \times 100$

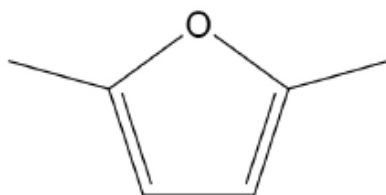
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D $\frac{0.15}{0.65} \times 100$

☐

3. No.9

What is the M_r of this compound?



[1 mark]

A 94.0

☐

B 96.0

☐

C 98.0

☐

D 100.0

☐

4. No.21

This is the equation for the conversion of 1,2-dibromoethane to butanedinitrile.



What is the percentage atom economy for the production of butanedinitrile in this reaction?

Relative formula masses, M_r

$$\text{CH}_2\text{BrCH}_2\text{Br} = 187.8$$

$$\text{KCN} = 65.1$$

$$\text{NCCH}_2\text{CH}_2\text{CN} = 80.0$$

$$\text{KBr} = 119.0$$

[1 mark]

A 100%

☐

B 40.2%

☐

C 31.6%

☐

D 25.2%

☐

5. No.22

A sample of cyclohexane contains 3.011×10^{24} atoms of carbon.

What is the mass of this sample?

The Avogadro constant, $L = 6.022 \times 10^{23} \text{ mol}^{-1}$

[1 mark]

A 70.0 g

☐

B 71.7 g

☐

C 420 g

☐

D 430 g

☐