

O Level Pure Chemistry MCQs

The Mole Concept and Stoichiometry Test 2.0

Q1

Ammonia and carbon dioxide can react to form urea, CON_2H_4 in the reaction as follows:



Urea is a useful compound as it can be used to provide nitrogen in fertilisers for plants.

What is the volume of carbon dioxide required to produce 120 g of urea given that the process is only 80% efficient at room temperature and pressure? (Mr $\text{CON}_2\text{H}_4 = 60$)

- | | | | |
|---|--------------------|---|---------------------|
| A | 38 dm ³ | B | 48 dm ³ |
| C | 60 dm ³ | D | 150 dm ³ |

Q2

0.5 mol/dm³ dilute sulfuric acid is added gradually to a flask containing 20 cm³ of 2 mol/dm³ sodium hydroxide solution.

What is the total volume, in cm³, of the mixture in the flask when the solution reaches pH 7?

- | | | | | | | | |
|---|----|---|----|---|----|---|-----|
| A | 30 | B | 40 | C | 60 | D | 100 |
|---|----|---|----|---|----|---|-----|

Q3

A piece of magnesium does not react when put into a solution of hydrogen chloride in chloroform. Which of the following changes will cause a reaction to occur?

- A adding a catalyst
- B adding water and stirring
- C increasing the temperature
- D increasing the concentration of hydrogen chloride in chloroform

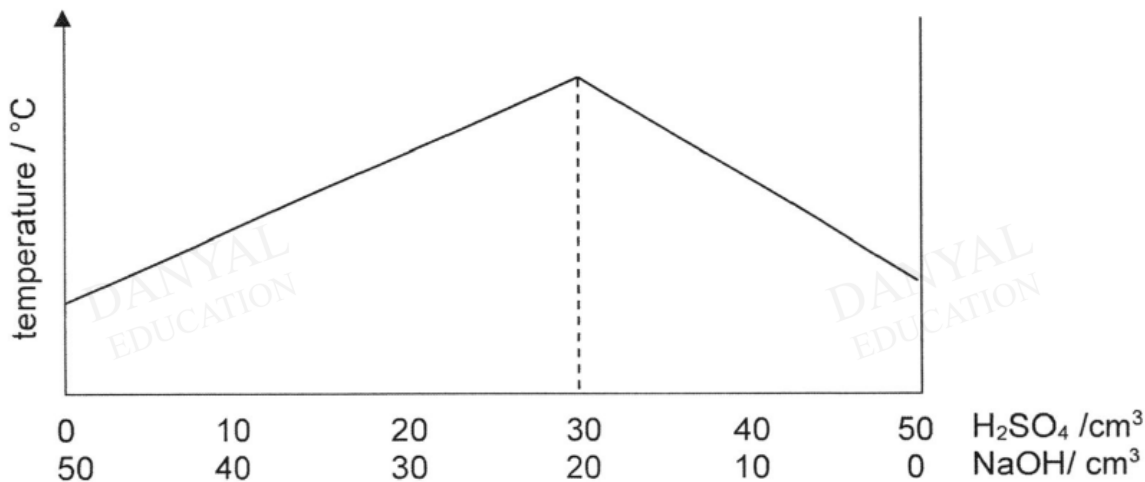
Q4

40 cm³ of 1.0 mol/dm³ solution of a magnesium salt contains 4.8 g of the dissolved compound. The salt is a _____.

- | | | | |
|---|-----------|---|----------|
| A | carbonate | B | sulfate |
| C | nitrate | D | chloride |

Q5

A solution of sulfuric acid has a concentration of 1 mol/dm^3 . Different volumes of the acid are added to different volumes of aqueous sodium hydroxide. The maximum temperature of each mixture is measured. The graph below shows the results.



What is the concentration of the aqueous sodium hydroxide?

- A 0.67 mol/dm^3 B 1.3 mol/dm^3
 C 1.5 mol/dm^3 D 3.0 mol/dm^3

Q6

The table shows the isotopic composition of iron.

isotope	percentage abundance/ %
⁵⁴ Fe	5.8
⁵⁶ Fe	91.6
⁵⁷ Fe	2.2
⁵⁸ Fe	0.4

What is the relative atomic mass of iron?

- A 55.9
 B 56.0
 C 56.1
 D 56.2

Q7

Talc is a mineral and has the formula $\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$.

What is the charge of the Si_4O_{10} ion?

- A -2
- B -4
- C +1
- D +2

Q8

Given they all have the same mass of 1 g, which substance has the smallest number of atoms?

- A argon
- B hydrogen
- C iodine
- D lead

Q9

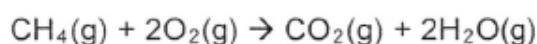
Aerials in portable radios are made of a mixture of the oxides of calcium and iron known as 'ferrite'. It contains 18.5% calcium and 51.9% iron by mass.

Which is the empirical formula of 'ferrite'?

- A CaFe_2O
- B CaFe_2O_4
- C Ca_2FeO_2
- D $\text{Ca}_4\text{Fe}_2\text{O}$

Q10

In a combustion reaction, 4 cm^3 of methane burned completely in 10 cm^3 of oxygen according to the equation:



What is the final volume of gas left behind at room temperature and pressure?

- A 4 cm^3
- B 6 cm^3
- C 12 cm^3
- D 14 cm^3

Answers

The Mole Concept and Stoichiometry Test 2.0

Q1 C

Q2 C

Q3 C

Q4 B

Q5 D

Q6 A

Q7 B

Q8 D

Q9 B

Q10 B

DANYAL
EDUCATION

DANYAL
EDUCATION

DANYAL
EDUCATION

DANYAL
EDUCATION

DANYAL
EDUCATION