

## O Level Pure Chemistry MCQs

### The Mole Concept and Stoichiometry Test 3.0

Q1

An element has two isotopes with mass numbers 34 and 35. Its relative atomic mass is 34.3. What is the relative abundance of the isotope with mass number 34?

- A** 0.3                      **B** 0.4                      **C** 0.6                      **D** 0.7

Q2

Which sample contains the most number of atoms?

- A** 0.5 mol of  $C_2H_6$   
**B** 1.0 mol of  $SO_3$   
**C** 1.5 mol of  $CO_2$   
**D** 3.0 mol of He

Q3

20 cm<sup>3</sup> of oxygen reacts with 20 cm<sup>3</sup> of carbon monoxide. What is the volume of gases remaining? All volume is measured at room temperature and pressure.

	oxygen (cm <sup>3</sup> )	carbon monoxide (cm <sup>3</sup> )	carbon dioxide (cm <sup>3</sup> )
<b>A</b>	0	0	20
<b>B</b>	0	0	40
<b>C</b>	10	0	20
<b>D</b>	10	10	20

Q4

Lead(II) oxide is produced by heating lead(II) carbonate.

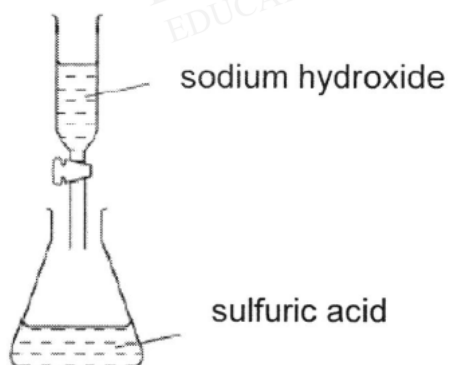


When 267 g of lead(II) carbonate is heated, 210 g of lead(II) oxide is produced.  
What is the percentage yield of lead(II) oxide?

- A**  $\frac{210}{223} \times 100$
- B**  $\frac{223}{210} \times 100$
- C**  $\frac{210}{267} \times 100$
- D**  $267 \times \frac{210}{223} \times 100$

Q5

During an experiment, 10 cm<sup>3</sup> of 1.0 mol/dm<sup>3</sup> sodium hydroxide, NaOH, is gradually added to 10 cm<sup>3</sup> of 2.0 mol/dm<sup>3</sup> sulfuric acid, H<sub>2</sub>SO<sub>4</sub>, containing methyl orange indicator.



Which change occurs in the mixture?

- A** A precipitate is formed.
- B** Water molecules are formed.
- C** The concentration of the OH<sup>-</sup> ions increases.
- D** The methyl orange changes colour.

Q6

Bones contain a complex mixture of calcium salts, proteins and other material. When a piece of bone is strongly heated in a current of air, the only residue is calcium oxide. From a sample of 50.0 g of bone, 14.0 g of calcium oxide was obtained.

What is the percentage by mass of calcium in the bone?

- A 10.0%                      B 14.0%                      C 20.0%                      D 28.0%

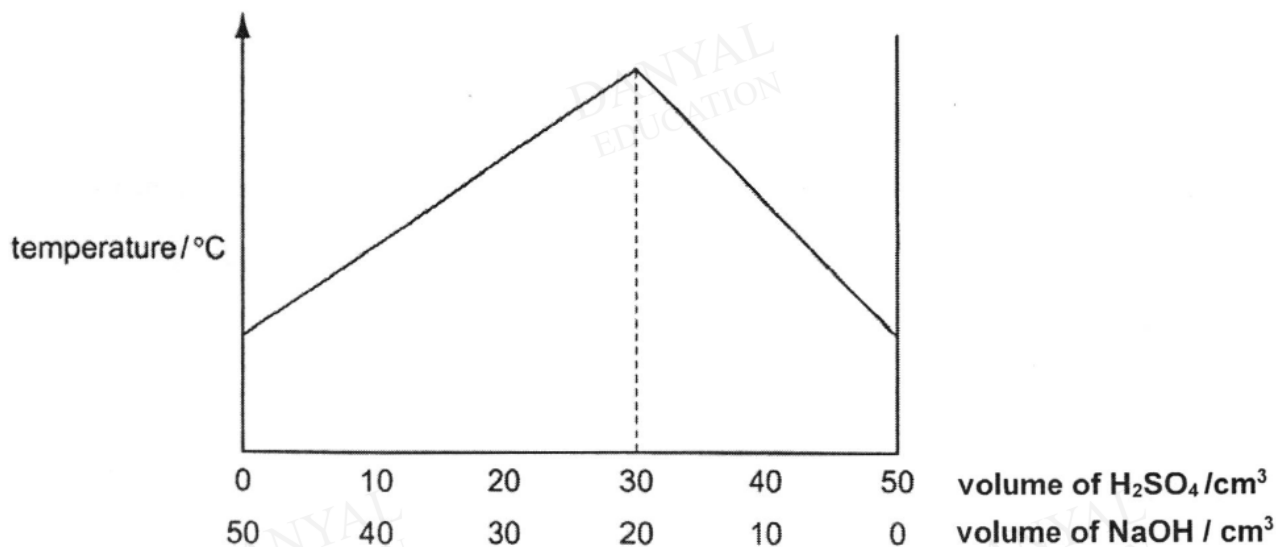
Q7

Which volume of  $1.0 \text{ mol/dm}^3$  hydrochloric acid is required to react completely with 1.25 g of zinc carbonate?

- A  $10 \text{ cm}^3$                       B  $20 \text{ cm}^3$                       C  $100 \text{ cm}^3$                       D  $200 \text{ cm}^3$

Q8

An aqueous solution of sulfuric acid has a concentration of  $1.0 \text{ mol / dm}^3$ . Different volumes of the acid are added to different volumes of aqueous sodium hydroxide.



What is the concentration of the aqueous sodium hydroxide?

- A  $0.6 \text{ mol / dm}^3$   
B  $0.75 \text{ mol / dm}^3$   
C  $1.5 \text{ mol / dm}^3$   
D  $3.0 \text{ mol / dm}^3$

Q9

A student writes down four statements about two gases, hydrogen chloride and carbon monoxide.

- One mole of each gas has the same mass.
- One mole of each gas occupies the same volume at room temperature and pressure.
- One mole of each gas has the same number of atoms.
- One mole of each gas has the same number of molecules.

How many of these statements is/are correct?

A 1

B 2

C 3

D 4

Q10

Which substance has exactly the same number of atoms as 1 g of hydrogen gas?

- A 1 g of helium gas at r.t.p
- B 24 dm<sup>3</sup> of oxygen gas at r.t.p
- C 127 g of solid iodine
- D 12000 cm<sup>3</sup> of neon gas

**Answers**

**The Mole Concept and Stoichiometry Test 3.0**

Q1 D

Q2 C

Q3 C

Q4 A

Q5 B

Q6 C

Q7 B

Q8 D

Q9 C

Q10 C

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