

0 6This question is about oxygen (O₂) and sulfur dioxide (SO₂).**0 6 . 1**

Give the test and result for oxygen gas.

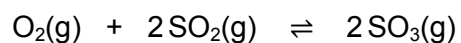
[2 marks]

Test _____

Result _____

0 6 . 2

The reaction between oxygen and sulfur dioxide is at equilibrium.

Some of the sulfur trioxide (SO₃) is removed.

Explain what happens to the position of the equilibrium.

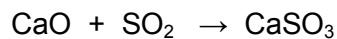
[2 marks]



0	6	.	3
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Sulfur dioxide is an atmospheric pollutant.

Sulfur dioxide pollution is reduced by reacting calcium oxide with sulfur dioxide to produce calcium sulfite.



7.00 g of calcium oxide reacts with an excess of sulfur dioxide.

Relative atomic masses (A_r): O = 16 S = 32 Ca = 40

Calculate the mass of calcium sulfite produced.

[4 marks]

Mass of calcium sulfite produced = _____ g

8

Turn over for the next question

Turn over ►



Question	Answers	Extra information	Mark	AO / Spec. Ref.
06.1	glowing splint		1	AO1 5.8.2.2
	relights		1	
06.2	equilibrium shifts to right-hand side	allow towards the products allow in favour of the forward reaction	1	AO3
	(because) concentration of SO ₃ decreases	this marking point is dependent on first marking point being awarded	1	AO2 5.6.2.5 5.6.2.7
		allow pressure decreases		
		allow to increase the concentration of SO ₃ allow to re-establish equilibrium		
06.3		an answer of 15(.0 g) scores 4 marks		AO2 5.3.1.2 5.3.2.1 5.3.2.2
	(M _r CaO =) 56	in all approaches allow a correct calculation using an incorrectly calculated M _r	1	
	(M _r CaSO ₃ =) 120		1	
	$\frac{7}{56} \times 120$		1	
	= 15(.0 g)		1	
		alternative approach A		
		(M _r CaO =) 56 (1)		
		$\frac{7}{56} = 0.125$ (moles) (1)		
		(mass CaSO ₃ =) 0.125 × 120 (1)		
		= 15(.0 g) (1)		

		alternative approach B $(M_r \text{ CaO} =) 56 \quad (1)$ $\frac{56}{7} = 8 \text{ (factor)} \quad (1)$ $(M_r \text{ CaSO}_3 =) 120 \quad (1)$ $\frac{120}{8} = 15(.0 \text{ g}) \quad (1)$ alternative approach C $(M_r \text{ CaO} =) 56 \quad (1)$ $(M_r \text{ CaSO}_3 =) 120 \quad (1)$ $\frac{120}{56} = 2.14235714 \text{ (factor)} \quad (1)$ $2.14235714 \times 7 = 15(.0 \text{ g}) \quad (1)$		
Total			8	