

**GCSE Chemistry A (Gateway Science)**  
**J248/03 C1-C3 and C7 Higher (Higher Tier)**

**Question Set 25**

1 An element, **X**, is reacted with oxygen, O<sub>2</sub>.

- There is one product. It is the oxide of **X**, **X** oxide.
- 4.86 g of **X** reacts with 3.20 g of oxygen to make 8.06 g of **X** oxide.

(a) (i)

Calculate the number of moles of **X**, oxygen and **X** oxide in the reaction.

- Relative atomic mass of **X** = 24.3
- Relative formula masses: O<sub>2</sub> = 32.0; **X** oxide = 40.3.

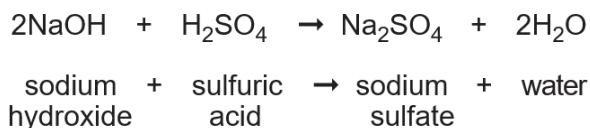
Number of moles of **X** = .....

Number of moles of O<sub>2</sub> = .....

Number of moles of **X** oxide = ..... [3]

(ii) Use your answer to (i) to write the **balanced symbol** equation for the reaction between **X** and oxygen to make **X** oxide. [2]

(b) The equation shows the reaction between sodium hydroxide and dilute sulfuric acid.



Calculate the mass of sodium hydroxide needed to make 30.0 g of sodium sulfate.

Give your answer to 3 significant figures.

Answer = ..... g [3]

**Total Marks for Question Set 25: 8**

# The Periodic Table of the Elements

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(0)										
1 1 H hydrogen 1.0	2 3 Li lithium 6.9	4 4 Be beryllium 9.0	5 11 Na sodium 23.0	6 12 Mg magnesium 24.3	7 19 K potassium 39.1	8 20 Ca calcium 40.1	9 37 Rb rubidium 85.5	10 55 Cs caesium 132.9	11 87 Fr francium	12 2 He helium 4.0	13 10 Ne neon 20.2	14 17 Ar argon 39.9	15 18 Kr krypton 83.8	16 54 Xe xenon 131.3	17 86 Rn radon	18	
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p><b>Key</b></p> <p>atomic number</p> <p><b>Symbol</b> <small>name</small></p> <p>relative atomic mass</p> </div>																	
			13 5 B boron 10.8	14 6 C carbon 12.0	15 7 N nitrogen 14.0	16 8 O oxygen 16.0	17 9 F fluorine 19.0	18 10 Ne neon 20.2	19 11 Na sodium 23.0	20 12 Mg magnesium 24.3	21 13 Al aluminium 27.0	22 14 Si silicon 28.1	23 15 P phosphorus 31.0	24 16 S sulfur 32.1	25 17 Cl chlorine 35.5	26 18 Ar argon 39.9	27 19 Kr krypton 83.8
									28 31 Ga gallium 69.7	29 32 Ge germanium 72.6	30 33 As arsenic 74.9	31 34 Se selenium 79.0	32 35 Br bromine 79.9	33 51 Sb antimony 121.8	34 52 Te tellurium 127.6	35 83 Bi bismuth 209.0	36 116 Lv livermorium
									37 49 In indium 114.8	38 50 Sn tin 118.7	39 81 Tl thallium 204.4	40 82 Pb lead 207.2	41 83 Bi bismuth 209.0	42 84 Po polonium 209.0	43 85 At astatine	44 114 Fl flerovium	45 116 Lv livermorium
									46 26 Fe iron 55.8	47 27 Co cobalt 58.9	48 28 Ni nickel 58.7	49 29 Cu copper 63.5	50 30 Zn zinc 65.4	51 46 Pd palladium 106.4	52 47 Ag silver 107.9	53 78 Pt platinum 195.1	54 80 Hg mercury 200.6
									55 44 Ru ruthenium 101.1	56 45 Rh rhodium 102.9	57 46 Pd palladium 106.4	58 79 Au gold 197.0	59 80 Hg mercury 200.6	60 78 Pt platinum 195.1	61 109 Mt meitnerium	62 110 Ds darmstadtium	63 112 Cn copernicium
									64 43 Tc technetium	65 44 Ru ruthenium 101.1	66 45 Rh rhodium 102.9	67 77 Ir iridium 192.2	68 79 Au gold 197.0	69 107 Bh bohrium	70 108 Hs hassium	71 109 Mt meitnerium	72 110 Ds darmstadtium
									73 24 Cr chromium 52.0	74 25 Mn manganese 54.9	75 42 Mo molybdenum 95.9	76 43 Tc technetium	77 74 W tungsten 183.8	78 106 Sg seaborgium	79 107 Bh bohrium	80 108 Hs hassium	81 109 Mt meitnerium
									82 23 V vanadium 50.9	83 41 Nb niobium 92.9	84 42 Mo molybdenum 95.9	85 73 Ta tantalum 180.9	86 105 Db dubnium	87 106 Sg seaborgium	88 107 Bh bohrium	89 108 Hs hassium	90 109 Mt meitnerium
									91 22 Ti titanium 47.9	92 40 Zr zirconium 91.2	93 41 Nb niobium 92.9	94 72 Hf hafnium 178.5	95 104 Rf rutherfordium	96 105 Db dubnium	97 106 Sg seaborgium	98 107 Bh bohrium	99 108 Hs hassium
									100 21 Sc scandium 45.0	101 39 Y yttrium 88.9	102 40 Zr zirconium 91.2	103 73 Ta tantalum 180.9	104 104 Rf rutherfordium	105 105 Db dubnium	106 106 Sg seaborgium	107 107 Bh bohrium	108 108 Hs hassium
									109 20 Ca calcium 40.1	110 38 Sr strontium 87.6	111 56 Ba barium 137.3	112 57-71 lanthanoids	113 88 Ra radium	114 89-103 actinoids	115 107 Bh bohrium	116 108 Hs hassium	117 109 Mt meitnerium

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