

The fundamental ideas in chemistry

1.	electron nucleus neutron	<i>each for 1 mark</i>		
				[3]
2.	(a) (i) B		1	
	(ii) D		1	
	(b) A and B – only one type of atom		1	
	C and D – more than one type of atom		1	
	<i>accept element for atom</i>			
	<i>ignore the word 'mixture'</i>			
	(chemically) bonded		1	
	<i>accept (chemically) joined or similar idea of joined</i>			
				[5]
3.	B carbon monoxide		1	
	CO	<i>accept carbon oxide</i>	1	
		<i>do not credit carbon dioxide</i>		
		<i>do not credit if any superscripts or subscripts used but accept C₁O₁,</i>		
		<i>accept OC</i>		
		<i>do not credit if obviously lower case</i>		
	C water		1	
	H ₂ O	<i>accept hydrogen oxide</i>	1	
		<i>do not accept hydrogen hydroxide</i>		
		<i>do not credit if obviously lower case or if 2 not subscript</i>		
		<i>do not accept HOH</i>		
		<i>accept OH₂</i>		
	D ammonia	<i>do not accept ammonium</i>	1	
	NH ₃	<i>do not credit if obviously lower case, or if 3 not subscript</i>	1	
		<i>accept nitrogen hydride or hydrogen nitride</i>		
		<i>do not accept hydrogen nitrate or nitrite</i>		
		<i>allow H₃N</i>		
				[6]
4.	• correct reactants (i.e. sodium + water either way round)			
	• correct products (i.e. sodium hydroxide + hydrogen, either way round)			
	• arrow → / =			
		<i>[do not allow produce/makes or similar]</i>		
		<i>[do not allow symbols or formulae] each for 1 mark</i>		
				[3]
5.	correct use of 'react'/'reaction'/reactants'/combine (not mixed/added/join)		3	
	correct use of 'produce'/'products'/gives/forms/makes/creates reactants			
	correctly identified			
	<i>each for 1 mark</i>			
	products correctly identified		1	

*(Reactants must be correctly identified for 'react' mark to be awarded. Similarly for products)
(magnesium reacts with zinc oxide to produce magnesium oxide and zinc or similar, will gain all 4 marks)
Oxidise or reduce given correctly can be credited both the marks for react and produce*

				[4]
6.	(a)	react with oxygen / oxidise / burn in oxygen / burning / combustion or tungsten to tungsten oxide or makes an oxide <i>key idea is oxidation ignore breaking ignore fire / flames / exothermic ignore react with air</i>	1	
	(b)	it is (very) unreactive / not reactive / inert / does not react with tungsten or it is a noble gas or it is in group 0 or 8 or 18 <i>do not accept unreactive / inert metal or argon is not <u>very</u> reactive</i> full outer shell (of electrons) / 8 electrons in outer shell does not need to gain / lose / swap / transfer / share electrons or does not need to form bonds <i>does not bond ionically / covalently</i>	1 1 1	
				[4]
7.	(a)	Na ₂ CO ₃	1	
	(b)	(i) A	1	
		(ii) loses electrons	1 1	
				[4]
8.	(a)	$2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$	2	<i>each for 1 mark</i>
	(b)	hydrogen and oxygen but 2 hydrogen and 1 oxygen	2	<i>gains 1 mark gains 2 marks</i>
				[4]
9.	(a)	(i) made up of one sort of atom <i>accept it is in the periodic table or has its own symbol</i>	1	
		(ii) nitrogen / N / N ₂ or oxygen / O / O ₂ <i>do not accept argon or helium do not accept oxide</i>	1	
	(b)	(i) compound carbon	1 1	
		(ii) bond	1	
				[5]
10.	(a)	56g <i>for 1 mark</i>	1	
	(b)	44 tonnes <i>for 1 mark</i>	1	
				[2]