

Acids, bases and salts

1.	sodium nitrate		1	
	$\text{NaNO}_3$		1	
	<i>do not credit lower case N or O, upper case A</i>			
	potassium sulphate		1	
	$\text{K}_2\text{SO}_4$		1	
	<i>accept potassium hydrogen sulphate or <math>\text{KHSO}_4</math></i>			
	<i>do not credit lower case K, S or O</i>			
	<i>ignore charges on ions</i>			[4]
2.	(a)	(i) lead chloride/product of lead + chloride ions is insoluble (in water)	1	
		<i>for 1 mark</i>		
		(ii) $\text{Pb}^{2+} + 2\text{Cl}^- \rightarrow \text{PbCl}_2 \text{ (s)}$	3	
		(allow $(\text{Pb})^{2+} 2 (\text{Cl}^-)$ )		
		<i>formula</i>		
		<i>solid state symbol</i>		
		<i>balancing</i>		
		<i>for 1 mark each</i>		
	(b)	copper hydroxide $\text{Cu(OH)}_2$	5	
		<i>each for 1 mark</i>		
		lead sulphate $\text{PbSO}_4$		
		<i>each for 1 mark</i>		
		no precipitate		
		<i>for 1 mark</i>		
		<i>Allow 1 mark for correct formula <math>\text{Na}_2\text{SO}_4</math> in (i)</i>		
		<i>Allow 1 mark for correct formula <math>\text{Mg(NO}_3)_2</math> in (ii)</i>		
		<i>0 marks for any formula in (iii)</i>		
				[9]
3.	(a)	sodium	1	
	(b)	neutralisation	1	
	(c)	increase/inc. number	1	
	(d)	$\text{H}^+$	1	
	(e)	$\text{OH}^-$	1	
	(f)	$\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$	1	
				[6]

4.	(i)	Mg + (H <sub>2</sub> SO <sub>4</sub> ) →	1
		MgSO <sub>4</sub> +	1
		H <sub>2</sub>	1
		<i>deduct 1 mark if not balanced only if all three correct</i>	
		<i>accept alternative metal of similar reactivity for example Zn or Fe</i>	
		<i>candidate would not then be awarded first mark for Mg</i>	
		<i>then error carried forward</i>	
		<i>deduct 1 mark if not balanced only if all three correct</i>	
	(ii)	to remove the (excess) magnesium	1
		<i>accept separate</i>	
		<i>accept insoluble substances or</i>	
		<i>solids or residue</i>	
		<i>do not accept unreactive substances</i>	
		<i>or impurities or remove magnesium from sulphuric acid</i>	
	(iii)	to <u>evaporate</u> (some of the water or solution)	1
		to form crystals or crystallise	1
		<i>accept to form a saturated solution</i>	
		<i>or concentrated solution</i>	
		<i>do not accept to leave MgSO<sub>4</sub></i>	
			[6]
5.		hydrogen ions (from acid) or protons / H <sup>+</sup>	1
		react with hydroxide ions (from alkali) / OH <sup>-</sup>	1
		to produce water	1
		<i>H<sup>+</sup> + OH<sup>-</sup> → H<sub>2</sub>O gains all 3 marks</i>	
		<i>ignore state symbols</i>	
		<i>molecules of hydrogen <u>ions</u> and molecules of hydroxide <u>ions</u></i>	
		<i>produce water = 2 marks</i>	
		<i>if they fail to get any of the above marks they can get 1 mark for</i>	
		<i>neutralisation / product neutral</i>	
			[3]
6.	(a)	(2) : (6) : (2)	2
		<i>All 3 correct gains 2 marks</i>	
		<i>2 correct gains 1 mark</i>	
	(b)	no water present/moist air cannot enter/do not thoroughly mix/ must be in solution etc.	1
		<i>for 1 mark</i>	
	(c)	(i) hydroxide (ion) / OH <sup>-</sup>	1
		<i>for 1 mark</i>	
		(ii) hydrogen (ion) / H <sup>+</sup>	1
		<i>for 1 mark</i>	
		(iii) water/H <sub>2</sub> O/hydrogen oxide	1
		<i>for 1 mark</i>	
			[6]