GROUP 1 ELEMENTS

Mark scheme

Question 1

Questions	Answers	Extra information	Marks
(a)(i)	hydrogen	accept H_2 allow H	1
(ii)	hydroxide	accept OH^- allow OH do not accept lithium hydroxide	1
(b)	any two from: potassium: • reacts / dissolves faster • bubbles / fizzes faster • moves faster (on the surface) • melts • produces (lilac / purple) flame	'it' = potassium accept converse for lithium allow reacts more vigorously / quickly / violently / explodes ignore reacts more allow fizzes more allow more gas allow moves more allow forms a sphere allow catches fire / ignites do **not** accept other colours	2
(c)	any two from: • fizzes / bubbles / gas • violent / vigorous / explodes / very fast reaction • floats / on surface • moves (very quickly) • melts (into a ball) • bursts into flame • gets smaller / (reacts to) form a solution / dissolves / disappears etc • steam / gets hot (owtte)	 hydrogen alone is insufficient ignore incorrect name if ëgasí stated accept container explodes ignore strong reaction ignore sinks accept (bright) light ignore colour / glow ignore alkaline solutions **or** change in colour etc	2
Total marks			6

Question 2

Questions	Answers	Extra information	Marks
(i)	Rb K Na	allow rubidium, potassium, sodium do not accept RB or NA	1
(ii)	decrease or become lower / smaller / less	allow from 180°C to 27°C	1
Total marks			2

Question 3

Questions	Answers	Extra information	Marks
(i)	quickly melted	allow melts in contact with water, allow bp 100 °C (of water) shows mp is low ignore one other piece of information	1
(ii)	easily cut	ignore one other piece of information	1
(iii)	effervescence / fizzing / bubbling	ignore named gas ignore one other piece of information	1
Total marks			3

Question 4

Questions	Answers	Extra information	Marks
(a)	acts as barrier between sodium and air / oxygen / water (vapour)	accept because they are reactive ignore oil will not react	1
(b)	$2Na + 2H_2O \rightarrow 2NaOH + H_2$	allow multiples / fractions	1
(c)	these metals react with water producing an alkaline solution or produce solution with pH greater than 7 / high pH	owtte allow produce OH^- ions **not** these metals are / form alkalis ignore 'strong' pH	1
(d)		it = potassium	

	bigger atom **or** outer shell electron further from nucleus **or** more shells less attraction to nucleus **or** more shielding outer electron more easily lost	outer electron must be mentioned once for all 3 marks **or** converse argument for sodium less reactive provided sodium is specified **not** less magnetic attraction **ignore** potassium reacts more easily	1 1 1
Total marks			6

Question 5

Questions	Answers	Extra information	Marks
(a)	sodium is a metal sodium forms ions with a +1 charge		1 1
(b)(i)	A		1
(ii)	hydrogen		1
Total marks			4

Question 6

Questions	Answers	Extra information	Marks
		allow converse throughout	
	reactivity increases down group		1
		for next three marks, outer electron needs to be mentioned once otherwise max = 2	1
	outer electron is further from nucleus	allow more energy levels / shells allow larger atoms	1
	less attraction between outer electron and nucleus	allow more shielding	1
	therefore, outer electron lost more easily		
Total marks			4