Question Number	Answer	Acceptable answers	Mark
1(a)(i)	2.3		**(1)**

Question Number	Answer	Acceptable answers	Mark
1(a)(ii)	A		**(1)**

Question Number	Answer	Acceptable answers	Mark
1(a)(iii)	<table><tr><th>particle</th><th>relative mass</th><th>relative charge</th></tr><tr><td>electron</td><td></td><td>-</td></tr><tr><td>neutron</td><td>1</td><td>0 /neutral/no charge</td></tr><tr><td>proton</td><td>1</td><td></td></tr></table> 4 correct = 2 marks 2/3 correct = 1 mark 1/0 correct = 0 mark		**(2)**

Question Number		Indicative content	Mark
QWC	***1(b)**	An explanation linking some of the following **Structure of boron-11** boron-11 atom has • 5 /same number of protons • 5 /same number of electrons • 6 neutrons / one more neutron than boron 10 **Working out RAM** relative atomic mass is 10.8 because • weighted mean • more boron-11 than boron-10 • boron-11 atoms are heavier • (therefore) relative atomic mass nearer 11 than 10 OR • in sample given 20/100 of the atoms have a mass of 10 • in sample given 80/100 of the atoms have a mass of 11 • 20/100*10=2 • 80/100*11=8.8 • 2+8.8=10.8 NB the diagram in part (a) gives the structure for boron-10 so do not give credit for this (even if claimed to be structure of boron-11 by referring to it as 'it')	**(6)**
Level	**0**	No rewardable content	
1	**1-**	• a limited description e.g. boron-11 has 5 protons and 6 neutrons • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, puncuation and grammar are used with limited accuracy	
2	**3-**	• a simple explanation e.g. boron-11 has 5 protons, 5 electrons and 6 neutrons and is heavier than boron-10. • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy	
3	**5 – 6**	• a detailed explanation e.g. boron-11 has 5 protons, 5 electrons and 6 neutrons, is heavier than boron-10 and there is more of boron-11 therefore relative atomic mass nearer to 11 than 10. • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, puncuation and grammar are used with few errors	

Question Number	Answer	Acceptable answers	Mark
1(c)	Answer should include one idea from each list <u>similarities</u> both put • elements into groups / periods (1) • elements with similar properties in same group (1) • metals and non-metals in separately (1) <u>differences</u> Mendeleev's table • was arranged by relative atomic mass(1) • had gaps (1) • had fewer elements (1) • did not include the noble gases (1)	reverse argument for modern periodic table specific examples e.g germanium	**(2)**