
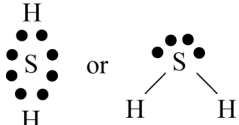


Assessment Schedule – 2007**Chemistry: Describe atomic structure and bonding (90172)****Evidence Statement**

Qu.	Evidence	Achievement	Achievement with Merit	Achievement with Excellence																																				
1	<table border="1"> <thead> <tr> <th>Symbol</th> <th>Number of Protons</th> <th>Number of Neutrons</th> <th>Number of Electrons</th> <th>Atomic Number</th> <th>Mass Number</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td>12</td> <td>24</td> </tr> <tr> <td></td> <td>3</td> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td></td> <td>3</td> <td>4</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>10</td> <td></td> <td>14</td> </tr> <tr> <td>Ca²⁺</td> <td>20</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Symbol	Number of Protons	Number of Neutrons	Number of Electrons	Atomic Number	Mass Number					12	24		3		3				3	4							10		14	Ca ²⁺	20					FOUR rows correct.		
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2 (a)	(i) S (ii) 2,8,6 (iii) S ²⁻ (iv) 2,8,8	THREE correct.																																						
2 (b)	(i)  must show 6 electrons, 2 unpaired (ii)  must show 2 non-bonding pairs	BOTH correct.																																						

4	<p>Nitrogen and phosphorus are in the same group on the periodic table/Group 15. The atoms have the same number of electrons in their outer shell/5/or gives electron configuration.</p> <p>If the outer shell is not filled, the atom is unstable. It will react to fill their outer shell/become more stable. Both N and P need 3 more electrons to fill their outer shell/become stable. Both ions N^{3-} and P^{3-} end up with 3 electrons more than there are protons in their nucleus, so their ions have a charge of -3.</p>	Identifies that both atoms can be found in the same group/ have same number of valence electrons.	Explains for both atoms/ ions, that they are unstable as atoms and require 3 electrons to fill the valence shell to become a stable ion. Must state stability/instability as reason to gain 3 electrons.	
5	<p>(F_2 and Br_2 are both elements in Group 17. They both form covalently bonded molecules.)</p> <p>Fluorine molecules are in gas state at room temperature because they are made up of 2 small atoms, F_2. The molecules are widely spaced and move at high speed</p> <p>Bromine molecules are made up of 2 larger atoms, Br_2. These molecules are closer together and slower moving, than the fluorine molecules.</p> <p>Both types of molecules are covalent, and have the same type of intermolecular forces between their molecules. Br_2 is a liquid because the intermolecular forces are not broken at room temperature F_2 is a gas because its weaker intermolecular forces are broken by the energy supplied at room temperature.</p>	Describes the separation, motion and attractive forces for either F_2 or Br_2 OR Two of separation, motion and attractive forces for both F_2 and Br_2 .	Explains state of one of the elements in terms of its, separation, motion and attractive force between molecules in relation to the energy at room temperature. OR Partial explanation for both elements.	Discusses BOTH of the elements in terms of their separation, motion and attractive forces between molecules in relation to the energy at room temperature..

Judgement Statement — 2007

Achievement	Achievement with Merit	Achievement with Excellence
<p>FOUR opportunities answered at Achievement level (or higher) including at least ONE descriptive question from Q2(c), Q4 or Q5.</p> <p>Minimum of $4 \times A$</p>	<p>FIVE opportunities answered including at least TWO at Merit level (or higher) and THREE at Achievement level (or higher).</p> <p>Minimum $2 \times M + 3 \times A$</p>	<p>SIX opportunities answered including at least ONE at Excellence level plus TWO at Merit level (or higher) and THREE at Achievement level (or higher).</p> <p>Minimum $1 \times E + 2 \times M + 3 \times A$</p>