

Question	Marking guidance	Mark	AO	Comments								
01.1	<p>This question is marked using levels of response. Refer to the Mark Scheme Instructions for Examiners for guidance on how to mark this question.</p> <table border="1"> <tr> <td>Level 3 5–6 marks</td> <td> <p>All stages are covered and the explanation of each stage is generally correct and virtually complete.</p> <p>Answer is communicated coherently and shows a logical progression from stage 1 to stage 2 then stage 3.</p> </td> </tr> <tr> <td>Level 2 3–4 marks</td> <td> <p>All stages are covered but the explanation of each stage may be incomplete or may contain inaccuracies OR two stages are covered and the explanations are generally correct and virtually complete.</p> <p>Answer is mainly coherent and shows progression from stage 1 to stage 3.</p> </td> </tr> <tr> <td>Level 1 1–2 marks</td> <td> <p>Two stages are covered but the explanation of each stage may be incomplete or may contain inaccuracies, OR only one stage is covered but the explanation is generally correct and virtually complete.</p> <p>Answer includes isolated statements but these are not presented in a logical order or show confused reasoning.</p> </td> </tr> <tr> <td>Level 0 0 marks</td> <td>Insufficient correct chemistry to gain a mark.</td> </tr> </table>	Level 3 5–6 marks	<p>All stages are covered and the explanation of each stage is generally correct and virtually complete.</p> <p>Answer is communicated coherently and shows a logical progression from stage 1 to stage 2 then stage 3.</p>	Level 2 3–4 marks	<p>All stages are covered but the explanation of each stage may be incomplete or may contain inaccuracies OR two stages are covered and the explanations are generally correct and virtually complete.</p> <p>Answer is mainly coherent and shows progression from stage 1 to stage 3.</p>	Level 1 1–2 marks	<p>Two stages are covered but the explanation of each stage may be incomplete or may contain inaccuracies, OR only one stage is covered but the explanation is generally correct and virtually complete.</p> <p>Answer includes isolated statements but these are not presented in a logical order or show confused reasoning.</p>	Level 0 0 marks	Insufficient correct chemistry to gain a mark.	6	2 AO1a 2 AO2a 2 AO2b	<p>Indicative chemistry content</p> <p>Stage 1: Electrons round P</p> <ul style="list-style-type: none"> • P has 5 electrons in the outside shell • With 3 electrons from 3 fluorine, there are a total of 8 electrons in outside shell • so 3 bond pairs, 1 non-bond pair <p>Stage 2: Electron pair repulsion theory</p> <ul style="list-style-type: none"> • Electron pairs repel as far as possible • Lone pair repels more than bonding pairs <p>Stage 3: Conclusions</p> <ul style="list-style-type: none"> • Therefore, tetrahedral / trigonal pyramidal shape • With angle of 109(.5)° decreased to 107°
Level 3 5–6 marks	<p>All stages are covered and the explanation of each stage is generally correct and virtually complete.</p> <p>Answer is communicated coherently and shows a logical progression from stage 1 to stage 2 then stage 3.</p>											
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01.2	$1s^22s^22p^63s^23p^63d^7$	1	AO1a	Allow correct numbers that are not superscripted
01.3	Too many electrons in d sub-shell / orbitals	1	AO3 1b	
01.4	Tetrahedral (shape) 109.5°	1 1	AO2a AO2a	Allow 109°