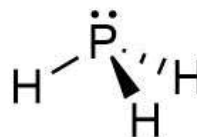
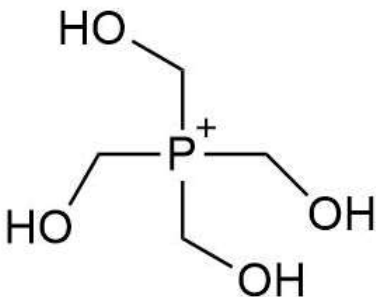
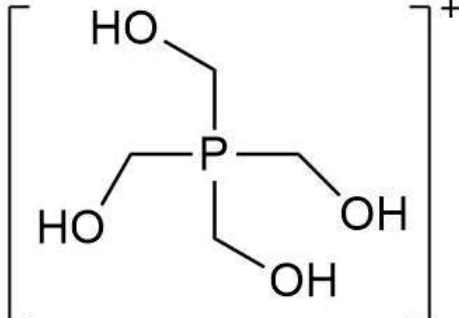


1.	This question is about life on Venus	Mark				
(a)	<div style="text-align: center;">  </div> <p><i>Shape must be clearly pyramidal rather than trigonal planar for the mark. Lone pair does not have to be drawn in. Wedges and dashes are not needed if shape is clear.</i></p>	<input checked="" type="checkbox"/>				
(b)	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; text-align: center;">(i) phosphine</td> <td style="width: 33%; text-align: center;">phosphoric acid</td> </tr> <tr> <td style="text-align: center;">-3</td> <td style="text-align: center;">+5 or 5</td> </tr> </table> <p><i>Both must be correct for mark.</i></p>	(i) phosphine	phosphoric acid	-3	+5 or 5	<input checked="" type="checkbox"/>
(i) phosphine	phosphoric acid					
-3	+5 or 5					
	(ii) $\text{PH}_3 + 2\text{O}_2 \rightarrow \text{H}_3\text{PO}_4$ <i>Must be fully correct for mark. Accept correct fractional coefficients for balancing.</i>	<input checked="" type="checkbox"/>				
(c)	(i) $\text{PCl}_3 + 3\text{LiH} \rightarrow \text{PH}_3 + 3\text{LiCl}$ <i>Must be fully correct for mark. Accept correct fractional coefficients for balancing.</i>	<input checked="" type="checkbox"/>				
	(ii) $\text{Ca}_3\text{P}_2 + 3\text{H}_2\text{O} \rightarrow 2\text{PH}_3 + 3\text{CaO}$ <i>or</i> $\text{Ca}_3\text{P}_2 + 6\text{H}_2\text{O} \rightarrow 2\text{PH}_3 + 3\text{Ca}(\text{OH})_2$ <i>Must be fully correct for mark. Accept correct fractional coefficients for balancing.</i>	<input checked="" type="checkbox"/>				
	(iii) $4\text{H}_3\text{PO}_3 \rightarrow 3\text{H}_3\text{PO}_4 + \text{PH}_3$ <i>Must be fully correct for mark. Accept correct fractional coefficients for balancing.</i>	<input checked="" type="checkbox"/>				
(d)	(i) SO_4^{2-} <i>Charge must be present and correct for mark.</i>	<input checked="" type="checkbox"/>				
	(ii) <div style="display: flex; align-items: center; justify-content: center; gap: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;"> <i>or</i> </div> <div style="text-align: center;">  </div> </div> <p><i>Fully correct structure is worth two marks. No partial credit. 3D shape is not required.</i></p>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>				
Total out of 9		9				