

Marks
6

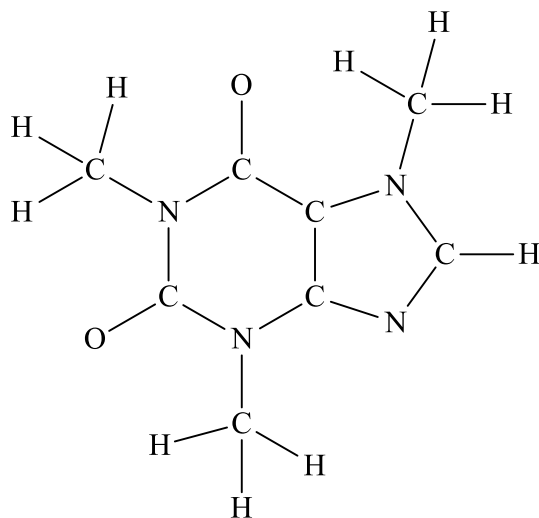
- Explain, using words and diagrams, the type of bonding present in lithium oxide and compare this to the type of bonding in carbon dioxide.

Carbon and oxygen can also react to form carbon monoxide. Draw the Lewis structure of this molecule.

Explain any difference in the polarity of carbon monoxide and carbon dioxide.

- By adding double bonds and lone pairs, complete the structural formula of the molecule caffeine below.

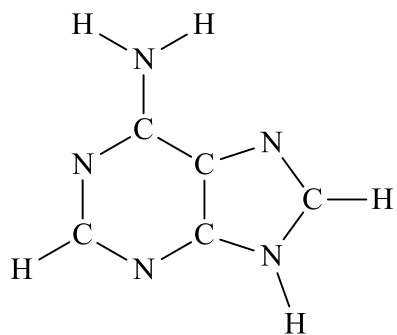
Marks
2



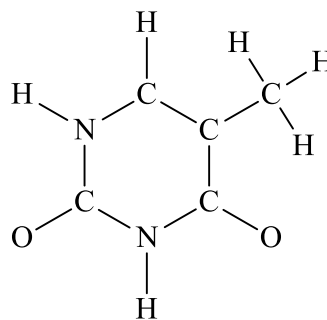
<ul style="list-style-type: none">• Explain the term 'resonance structures' and give an example.	Marks 2
<ul style="list-style-type: none">• Explain why stable compounds of oxygen have 8 electrons in the valence shell, but compounds of sulfur may have 8, 10 or 12 electrons in their valence shell.	2
<ul style="list-style-type: none">• In the spaces provided, briefly explain the meaning of the following terms. <p>Valence electrons</p> <p>Polar bond</p>	2

- By adding double bonds and lone pairs, complete the structural formulae of the nitrogen bases adenine and thymine below.

Marks
3



adenine



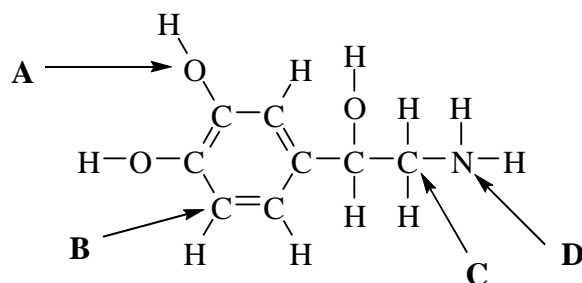
thymine

- Briefly explain the concept of resonance. Give at least one example.

2

- The structure of adrenaline is shown below.

3



Give the approximate bond angles at the indicated atoms.

A:	B:	C:	D:
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Which, if any, of the indicated atoms has at least one lone pair of electrons?