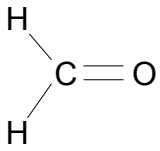
BONDING IN CARBONYL COMPOUNDS

1. Carbonyl compounds contain the carbon-oxygen double bond, C=O. The simplest one is methanal:



This question is about the bonding in methanal.

a) Write the electronic structure for a carbon atom in its ground (unexcited) state.

b) Describe the changes to the electronic structure of the carbon *before* it bonds to the oxygen and hydrogens. Use diagrams where necessary.

c) Write the electronic structure for an oxygen atom in its ground state.

d) Describe the changes to the electronic structure of the oxygen *before* it bonds to the carbon. Use diagrams where necessary.

e) Describe what happens when the carbon bonds with the hydrogens and oxygen, using diagrams where necessary. Explain why the arrangement of electrons between the carbon and the oxygen isn't exactly the same as the arrangement of the electrons in a carbon-carbon double bond.