

Chemguide – questions

BONDING IN METHANE AND ETHANE

1. When carbon forms bonds, starting from a carbon atom, you can think of the bond formation happening in the following stages:
 - promotion of an electron
 - hybridisation
 - formation of molecular orbitals

When carbon forms methane, CH_4 :

- a) Explain what happens when an electron gets promoted.
 - b) Describe what is meant by hybridisation, and name the type of hybrid orbitals formed.
 - c) Describe what happens when the hybridised carbon atom combines with hydrogen atoms.
 - d) Why is methane tetrahedral in shape?
2. Now describe the bonding in ethane, C_2H_6 , starting from carbon and hydrogen atoms. You don't need to discuss the shape of an ethane molecule.