

Exercise 5.4 Hybridization

1. Complete the following sentences.

(a) When an atom is described as being sp hybridized, its electron group geometry is

_____.

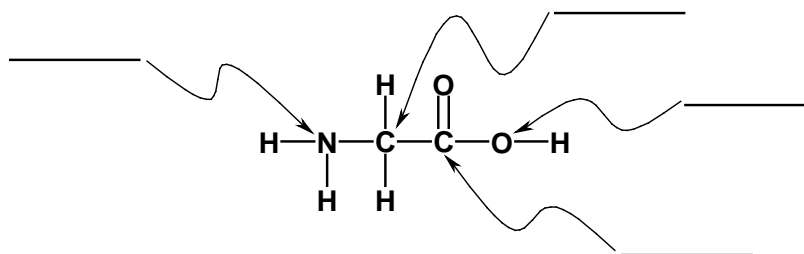
(b) When an atom is described as being sp^2 hybridized, its electron group geometry is

_____.

(c) When an atom is described as being sp^3 hybridized, its electron group geometry is

_____.

2. The structural formula of glycine is shown below. Name the hybrid orbital set used by each central atom when VB theory is applied to glycine, and indicate how many unhybridized $2p$ orbitals remain on each central atom.



3. DNA consists of three types of molecules connected together. The “coding” molecules are called nitrogenous bases (because they are bases that contain nitrogen). The molecule shown below is adenine, one of the four nitrogenous bases in DNA.

Name the hybrid orbital set used by each of the three **bolded** atoms when VB theory is applied to adenine. Also, indicate the number of unhybridized $2p$ orbitals remaining on each bolded atom.

