

VSEPR THEORY & ORBITAL HYBRIDIZATION

Exercises:

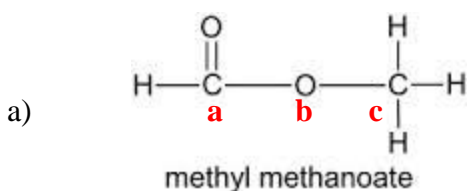
Complete the table on the next page with the appropriate information. Please note the following:

- You are encouraged to draw Lewis structure for molecules in order to determine the necessary information requested in the table.
- Where bond angles differ from ideal, indicate by > or < signs.
- Where there are more than one bond angle in the molecule, indicate all possible angles.

Questions:

1. The three species NH_2^- , NH_3 and NH_4^+ have H–N–H bond angles of 105° , 107° and 109° respectively. Explain this variation in bond angles.

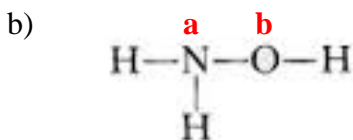
2. Give approximate values for the indicated bond angles in the following molecules:



$C_a =$ _____

$O =$ _____

$C_c =$ _____



$N_a =$ _____

$O_b =$ _____

VSEPR THEORY & MOLECULAR HYBRIDIZATION

Molecule or Ion	Electron-pair groups			Geometry		Orbital Hybridization	Bond Angle	Polar (Yes/No)
	Total	NB	B	Electron-pair	Molecular			
BeCl ₂								
BCl ₃								
CH ₂ Cl ₂								
BH ₄ ⁻								
ICl ₃								
SCl ₂								
TeF ₄								
PF ₆ ⁻								
SO ₃								