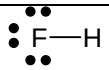
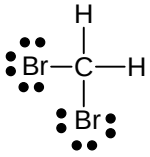
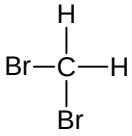
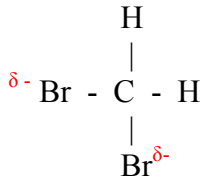
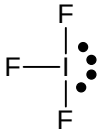
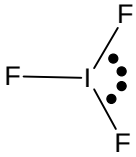
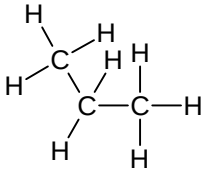
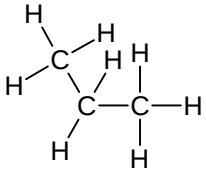
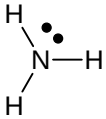
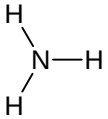
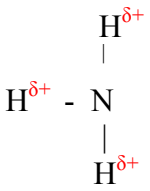
CHM 1010 **GAGE**

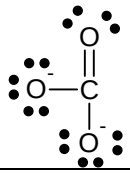
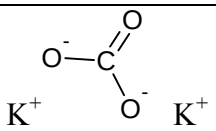
WORKSHEET ON COVALENT BONDING AND POLARITY

For each of the substances below provide the information requested in 1-4.

1. Write the dot structure and the structural formula.
2. Label each pair of electrons on the central atom as a lone pair or involved in a single bond, double bond or triple bond.
3. Mark the dipole moment of each polar bond on the structural formula.
4. For the substances that are covalently bonded molecules, make a prediction about whether the molecule as a whole will be polar and explain your decision.

NOTE: please use electron pairs in place of all bonds (lines) in the dot structures. The drawing program used for this answer sheet cannot make this substitution.

Substance	Dot Structure	Structural Formula	Bond Dipoles	Polar Molecule?
HF		F—H One single bond; 3 lone pairs on F	$^{\delta+}$H – F$^{\delta-}$	Yes, because unequal charge distribution
CH_2Br_2				Yes slightly, because unequal charge distribution
IF_3			Slightly negative charges on F	? Because the fluorines are slightly negative and there are lone pairs it might be either – impossible to tell with this information
$CH_3CH_2CH_3$			No dipoles	No
NH_3				Yes, partially positive H and slightly negative N

K_2CO_3	K^+ 		NA – fully charged ions	Since this is not a covalent compound this does not apply