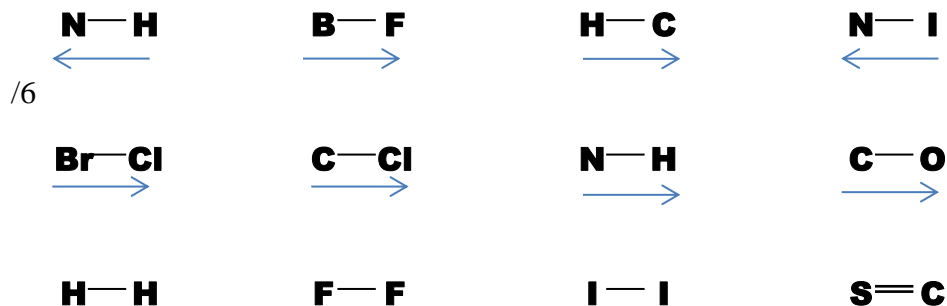


Chemistry 20 – Lesson 11  
Electronegativity and molecular shapes

/48

**Part A**

In the following diagrams draw an arrow to indicate the direction of the polar bond.



Explain why cesium and francium are the most reactive metals.

- /2 **Cesium and francium have low electronegativities which means that they give up electrons very easily. Since metals react by giving away their electrons, cesium and francium are the most reactive.**

Explain why fluorine is the most reactive non-metal.

- /2 **Fluorine has the highest electronegativity which means that it holds on to electrons very strongly. Since nonmetals react by taking electrons from metals, fluorine is the most reactive nonmetal.**

## Part B

2 marks each

Molecular Substance	Lewis or structural diagram	Shape Around Central Atom(s)	Shape Diagram & Bond Dipoles	Polarity of molecule
H <sub>2</sub> O		angular		polar
HF		linear		polar
NH <sub>3</sub>		trigonal pyramidal		polar
NH <sub>4</sub> <sup>+</sup>		tetrahedral		non-polar
N <sub>2</sub>		linear		non-polar
HBr		linear		polar
OCl <sub>2</sub>		angular		polar
C <sub>2</sub> H <sub>2</sub>		linear linear		non-polar
SiCl <sub>4</sub>		tetrahedral		non-polar

Molecular Substance	Lewis or structural diagram	Shape Around Central Atom(s)	Shape Diagram & Bond Dipoles	Polarity of molecule
CO <sub>2</sub>		linear		non-polar
CH <sub>3</sub> I		tetrahedral		polar
C <sub>2</sub> H <sub>3</sub> Cl		trigonal planar trigonal planar		polar
CH <sub>4</sub>		tetrahedral		non-polar
C <sub>2</sub> H <sub>6</sub>		tetrahedral tetrahedral		non-polar
C <sub>2</sub> H <sub>4</sub>		trigonal planar trigonal planar		non-polar
CH <sub>3</sub> OH		tetrahedral on C angular on O		polar
O <sub>2</sub>		linear		non-polar

Molecular Substance	Lewis or structural diagram	Shape Around Central Atom(s)	Shape Diagram & Bond Dipoles	Polarity of molecule
O <sub>3</sub>		angular on each O		non-polar
H <sub>2</sub> O <sub>2</sub>		angular angular		polar
C <sub>2</sub> H <sub>5</sub> OH		tetrahedral - C tetrahedral - C angular - O		polar