

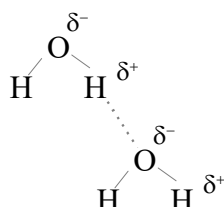
1. a) Covalent                      b) Metallic                      c) Covalent

2.

- a) Electricity is moving charges; the ions are only free to move when melted or dissolved.  
 b) Electricity is moving charges; the electrons are delocalised and so free to move at all times.

3.

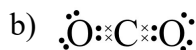
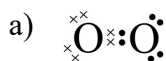
- a) The ability of an element to attract electrons during bonding.  
 b) Primary is between atoms, secondary is between molecules.  
 c) Hydrogen bonding is strong dipole-dipole bonding where at least one dipole has a hydrogen.



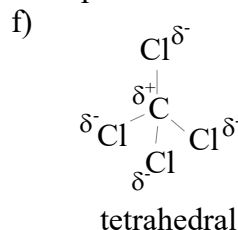
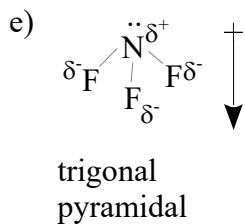
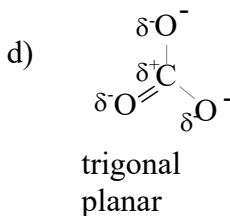
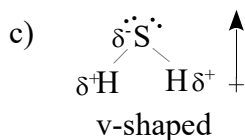
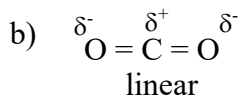
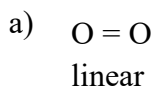
The dotted line represents hydrogen bonding

4. (i) ionic, (ii) metallic, (iii) covalent, (iv) covalent  
 (i) NaI and (ii) Na can not form molecules. Only covalent substances can form molecules.

5.



6.



7. Both are ionic substances. For KF there is the attraction between  $\text{K}^+$  and  $\text{F}^-$  ions, whereas for  $\text{CaF}_2$  there is the attraction between  $\text{Ca}^{2+}$  and  $\text{F}^-$  ions. In the case of  $\text{CaF}_2$  there is more charge, so the attraction will be stronger, so the melting point will be higher.
8. Going down the table, the electronegativity of the element bonded to F decreases. That means the electronegativity difference between F and the other element increases. This means the bonds will be more polar, so the molecules will be more polar. They will therefore have stronger attraction between them, so a higher boiling point.