Chemistry 141 Name key

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Quiz 9a (20 points) Wednesday, November 7, 2012

1. (16 points) Write a Lewis electron dot structure for the following two molecules/ions. Tell the orbital and molecular geometry of each and give the hybridization of the central atom. Show resonance structures and charges where appropriate.
   1. HCO2− (Both oxygens and the hydrogen are attached directly to the central carbon.)



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| orbital geometry around C | trigonal planar |
| molecular geometry around BrC | trigonal planar |
| hybridization of C | sp2 |

* 1. BrF3



|  |  |
| --- | --- |
| orbital geometry around Br | trigonal bipyramadal |
| molecular geometry around Br | T-shaped |
| hybridization of Br | sp3d |

1. (4 points) Carbon dioxide is a non-polar molecule whereas sulfur dioxide is polar. Explain this difference in polarity.

Carbon dioxide is a linear molecule so the dipole moments of the two polar bonds cancel since they are in equal and opposite directions. Sulfur dioxide is a bent molecule so the two dipole moments add together giving a net dipole pointed between the two oxygens.

