Lab: Constructing Molecular Models

Backgound: When 2 nonmetals bond, neither wants to give up their electron(s) like a metal does, so the nonmetals form a ***covalent bond*** and ***share*** their valence electrons. Atoms covalently bonded together form ***molecules***, and molecular models can be used to study their shape.

Directions:

1. Examine the contents of your molecular model kit. Each kit should contain colored spheres to represent atoms and sticks to represent bonds. Different colored spheres represent different elements: Black = Carbon, White = Hydrogen, Red = Oxygen, Blue = Nitrogen, Green = Chlorine.

2. To begin constructing a model, select the spheres needed to represent each of the atoms shown by the formula. The sticks which will hold the spheres together represent ***bonds (shared pairs of electrons).***

3. The holes in the spheres represent bonding sites (unpaired electrons that are looking for another electron to bond with). Attach the spheres together in such a way that all holes are filled. If all the holes are not filled when all the spheres are in place, use the longer sticks to make double or triple bonds (see figure below).

4. Construct all models given on the following pages. For each molecule, draw both the molecular diagram and the Lewis Diagram (electron dot diagram) in the box given.

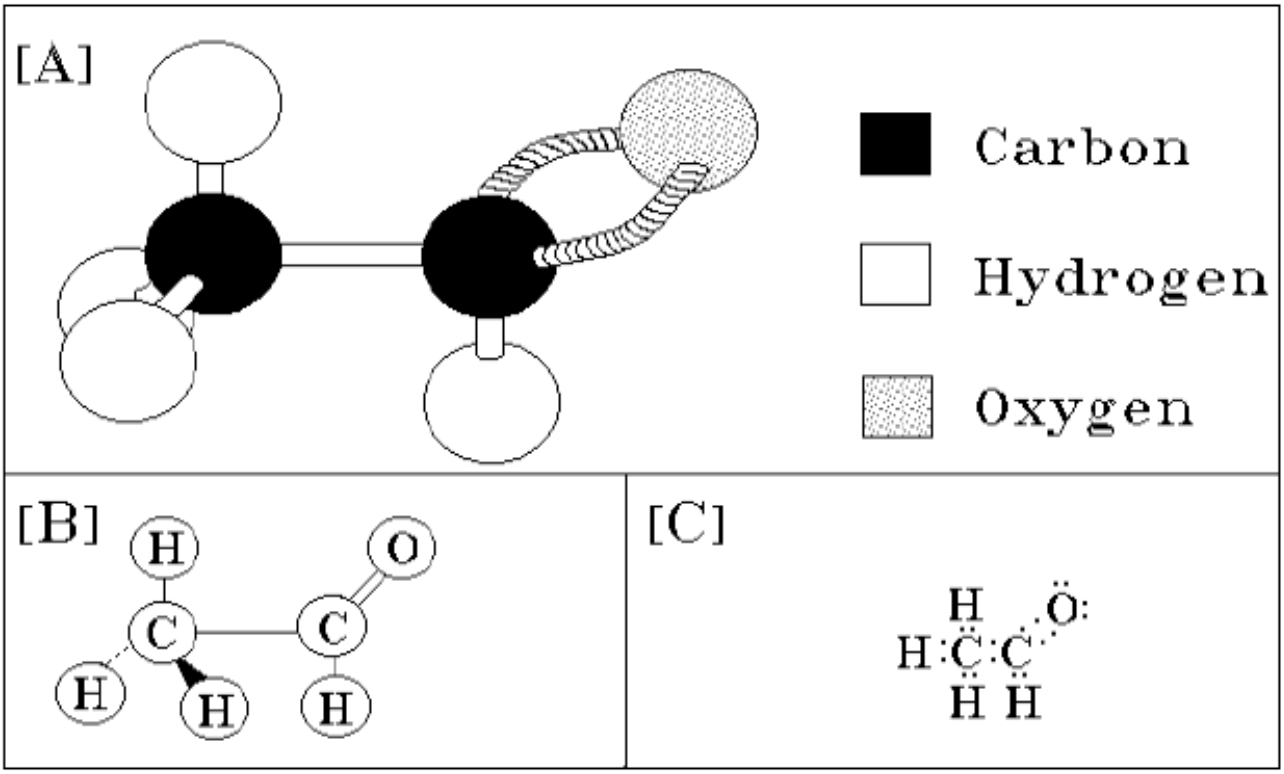

Figure 1. *The structure of C_2H_4O:* (a) a molecular model; (b) a molecular diagram; (c) an electron dot diagram.

H_2	Cl_2
HCl	H_2O
O_2	N_2

NH_3	CH_4
CCl_4	CO_2
C_2H_4	CH_3OH