2a. Draw the resonance structures for carbonate ion, CO$_3^{2-}$.

\[ \text{resonance structure} \]

b. CO$_3^{2-}$'s shape is \textit{trigonal planar} and its bond angles are \(120^\circ\).

c. Sketch the molecule above.

d. Sketch the 3D arrangement of atoms in the carbonate ion, CO$_3^{2-}$ using ball-and-stick representations, then draw the following:

i. The unhybridized p orbitals for the C atom and the three outer O atoms and the resulting MOs holding the delocalized electrons—i.e., electrons shared by all four atoms

ii. The $\sigma$ and $\pi$ bonds in the polyatomic ion