

Count the valence electrons in each molecule below, and draw Lewis structures for them.

**Part I. Simple structures.** None of these molecules have formal charges or common resonance structures.

PH <sub>3</sub> #e <sup>-</sup> _____          	CF <sub>4</sub> #e <sup>-</sup> _____          	CCl <sub>2</sub> F <sub>2</sub> #e <sup>-</sup> _____          
H <sub>2</sub> O    #e <sup>-</sup> _____          	N <sub>2</sub> #e <sup>-</sup> _____          	F <sub>2</sub> #e <sup>-</sup> _____          
NHF <sub>2</sub> #e <sup>-</sup> _____          	CH <sub>4</sub> #e <sup>-</sup> _____          	SF <sub>2</sub> #e <sup>-</sup> _____          

**Part II. Structures with possible formal charges.** Draw one valid Lewis structure, and show all nonzero formal charges.

$\text{H}_3\text{O}^+$ #e <sup>-</sup> _____	$\text{NH}_3$ #e <sup>-</sup> _____	$\text{SO}_2$ #e <sup>-</sup> _____
$\text{NO}_2^-$ #e <sup>-</sup> _____	$\text{AsCl}_5$ #e <sup>-</sup> _____	$\text{XeF}_4$ #e <sup>-</sup> _____
$\text{O}_3$ #e <sup>-</sup> _____	$\text{N}_2\text{O}$ #e <sup>-</sup> _____	$\text{I}_3^-$ #e <sup>-</sup> _____
$\text{SF}_6$ #e <sup>-</sup> _____	$\text{CN}^-$ #e <sup>-</sup> _____	$\text{NO}_3^-$ #e <sup>-</sup> _____

**Part III. Free-for-all!** In this section, draw the Lewis structure and any valid resonance structures. Label each structure with a letter (A, B, C, etc.), and indicate which is the best. If they are all equally good, then write *equivalent*.

CNO <sup>-</sup>	#e <sup>-</sup> _____  best structure:  _____
CS <sub>2</sub>	#e <sup>-</sup> _____  best structure:  _____
N <sub>3</sub> <sup>-</sup>	#e <sup>-</sup> _____  best structure:  _____
CO <sub>3</sub> <sup>2-</sup>	#e <sup>-</sup> _____  best structure:  _____

$\text{N}_2\text{O}$	<p>#e<sup>-</sup> _____</p> <p>best structure:</p> <p>_____</p>
$\text{SO}_3$	<p>#e<sup>-</sup> _____</p> <p>best structure:</p> <p>_____</p>