

CHEMBUDDY CHAPTER 4  
4.2 MOLECULAR GEOMETRY



CHOOSE THE CORRECT ANSWER

| NO | QUESTION                                                                                                                                                                                                                                                                                                                                         | ANSWER                          |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| 1  | <p>Choose the <b>CORRECT</b> statement regarding <math>\text{PH}_4^+</math> molecule.</p> <p>A. The H-P-H bond angles are less than <math>109.5^\circ</math>.</p> <p>B. The P-H bonds are polar, and the molecule is polar.</p> <p>C. The molecular geometry is tetrahedral.</p> <p>D. It has the same geometry as <math>\text{NF}_3</math>.</p> | <p>A      B</p> <p>C      D</p> |
| 2  | <p>The F-Cl-F bond angles in <math>\text{ClF}_3</math> are expected to be</p> <p>A. <math>90^\circ</math> and <math>120^\circ</math>    C. <math>&lt;90^\circ</math> and <math>&lt;120^\circ</math></p> <p>B. <math>&lt;90^\circ</math>              D. <math>&lt;120^\circ</math></p>                                                           | <p>A      B</p> <p>C      D</p> |
| 3  | <p>Which one of the following molecules is <b>non-polar</b>?</p> <p>A. <math>\text{OF}_2</math>              C. <math>\text{H}_2\text{O}</math></p> <p>B. <math>\text{CH}_3\text{Cl}</math>            D. <math>\text{BF}_3</math></p>                                                                                                           | <p>A      B</p> <p>C      D</p> |
| 4  | <p>Which of the following molecules have the <b>SAME</b> geometries?</p> <p>A. <math>\text{SF}_4</math> and <math>\text{CH}_4</math>    C. <math>\text{CO}_2</math> and <math>\text{BeH}_2</math></p> <p>B. <math>\text{CO}_2</math> and <math>\text{H}_2\text{O}</math>    D. <math>\text{N}_2\text{O}</math> and <math>\text{NO}_2</math></p>  | <p>A      B</p> <p>C      D</p> |
| 5  | <p>Which of the following molecules forms trigonal bipyramidal?</p> <p>A. <math>\text{PCl}_3</math>              C. <math>\text{NBr}_3</math></p> <p>B. <math>\text{PCl}_5</math>              D. <math>\text{ICl}_4^+</math></p>                                                                                                                | <p>A      B</p> <p>C      D</p> |



|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                 |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| 6 | <p>Which of the following statement is <b>TRUE</b> for <math>\text{ICl}_4^+</math> and <math>\text{ICl}_4^-</math>.</p> <p>A. Both compounds form non-polar molecules.</p> <p>B. There are more lone pairs on the central atom, I for <math>\text{ICl}_4^+</math> than <math>\text{ICl}_4^-</math>.</p> <p>C. Bond angle between Cl-I-Cl in <math>\text{ICl}_4^+</math> is smaller than <math>\text{ICl}_4^-</math>.</p> <p>D. Both compounds have 5 electron pairs surrounding the central atom.</p>                                  | <p>A      B</p> <p>C      D</p> |
| 7 | <p><math>\text{PCl}_5</math> molecule has</p> <p>A. to be non polar molecule with non polar bonds.</p> <p>B. non polar bonds and is a polar molecule.</p> <p>C. to be polar molecule with polar bonds.</p> <p>D. polar bonds but is a non polar molecule.</p>                                                                                                                                                                                                                                                                          | <p>A      B</p> <p>C      D</p> |
| 8 | <p>Why <math>\text{XeF}_2</math> is a non polar molecule?</p> <p style="text-align: center;"> <math>\begin{array}{c} \text{:}\ddot{\text{F}}\text{---}\ddot{\text{Xe}}\text{---}\ddot{\text{F}}\text{:} \\ \text{:}\ddot{\text{F}}\text{---}\ddot{\text{Xe}}\text{---}\ddot{\text{F}}\text{:} \end{array}</math> </p> <p>A. Because it is expended octet molecule.</p> <p>B. Because it has same terminal atoms.</p> <p>C. Because the linear shape is symmetrical thus <math>\mu=0</math>.</p> <p>D. Because it has 3 lone pairs.</p> | <p>A      B</p> <p>C      D</p> |



|    |                                                                                                                                                                                                                                                                                     |                                                              |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| 9  | <p>These molecules are <math>sp^2</math> hybrid orbital on central atom except</p> <p>A. <math>CO_2</math>                      C. <math>BeCl_2</math><br/>B. <math>H_2O</math>                      D. <math>HCN</math></p>                                                        | <p>A                      B<br/>C                      D</p> |
| 10 | <p>What are the orbitals overlapped to form <math>BF_3</math>?</p> <p>A. <math>sp</math> and <math>p</math>-orbital<br/>B. <math>sp^2</math> and <math>p</math>-orbital<br/>C. <math>sp^3</math> and <math>p</math>-orbital<br/>D. <math>sp^3</math> and <math>s</math>-orbital</p> | <p>A                      B<br/>C                      D</p> |
| 11 | <p>Which of the following molecule is NOT tetrahedral?</p> <p>A. <math>XeF_4</math><br/>B. <math>CCl_4</math><br/>C. <math>SiCl_4</math><br/>D. <math>CH_4</math></p>                                                                                                               | <p>A                      B<br/>C                      D</p> |
| 12 | <p>Which of the following molecule is NOT tetrahedral?</p> <p>A. <math>XeF_4</math><br/>B. <math>CCl_4</math><br/>C. <math>SiCl_4</math><br/>D. <math>CH_4</math></p>                                                                                                               | <p>A                      B<br/>C                      D</p> |

