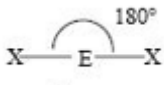
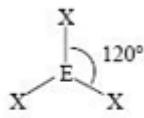
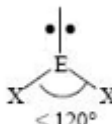
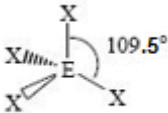
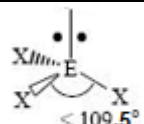
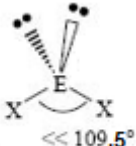
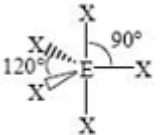
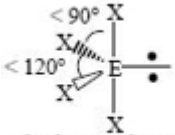
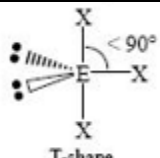
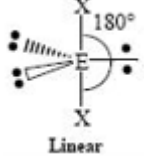


CHEMICAL BONDING

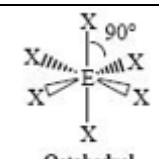
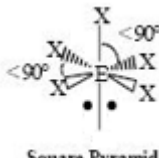
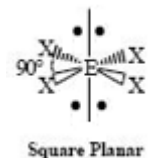
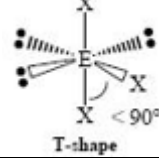
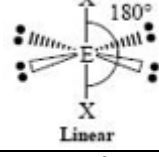
HYBRIDIZATION and VALENCE SHELL ELECTRON PAIR REPULSION (VSEPR) THEORY

Hybridization is the formation of newly hybridized orbitals by fusion of atomic orbitals in an atomic space. Hybridization is also an expansion of the valence bond theory. Valence shell electron pair repulsion (VSEPR) is a model used in chemistry to predict the geometry of individual molecules from the number of electron pairs surrounding their central atoms. It is also named the Gillespie-Nyholm theory.

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| <i>Hybridization</i> | <i>VSEPR display</i> | <i>Geometry</i> |
|--|----------------------|---|
| sp ($s+p_z$) | EX_2 |  <p style="text-align: center;">Linear</p> |
| sp^2 ($s+p_z+p_y$) | EX_3 |  <p style="text-align: center;">Trigonal Planar</p> |
| | EX_2L |  <p style="text-align: center;">Bent or Angular</p> |
| sp^3 ($s+p_z+p_y+p_x$) | EX_4 |  <p style="text-align: center;">Tetrahedral</p> |
| | EX_3L |  <p style="text-align: center;">Trigonal Pyramid</p> |
| | EX_2L_2 |  <p style="text-align: center;">Bent or Angular</p> |
| sp^3d ($s+p_z+p_y+p_x+d_{z^2}$) | EX_5 |  <p style="text-align: center;">Trigonal Bipyramid</p> |
| | EX_4L |  <p style="text-align: center;">Sawhorse or Seesaw</p> |
| | EX_3L_2 |  <p style="text-align: center;">T-shape</p> |
| | EX_2L_3 |  <p style="text-align: center;">Linear</p> |

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| | | |
|---|-----------|---|
| $sp^3 d^2$ $(s+p_z+p_y+p_x+d_{z^2}+d_{x^2-y^2})$ | EX_5 |  Octahedral |
| | EX_4L |  Square Pyramid |
| | EX_3L_2 |  Square Planar |
| | EX_2L_3 |  T-shape |
| | EXL_4 |  Linear |
| $sp^3 d^3$ $(s+p_z+p_y+p_x+d_{z^2}+d_{x^2-y^2}+d_{xy})$ | EX_6 | 90° |
| | EX_5L | 90° |
| | EX_4L_2 | 90° |
| $sp^3 d^4$ $(s+p_z+p_y+p_x+d_{z^2}+d_{x^2-y^2}+d_{xy}+d_{xz})$ | EX_7 | $90^\circ-72^\circ$ |
| | EX_6L | |