1. Write a Lewis structure for  $N_2$ ,  $NH_3$ ,  $NO_2^-$ ,  $NO_3^-$ ,  $S_2$ ,  $SO_2$ ,  $SO_3$ ,  $SO_3^{2-}$  and mark those which are not necessarily resonance strucures/hybrids.  $\rightarrow$  Octett rule, hypervalence, formal charges



\* No other resonance structure

2. What is the meaning of VSEPR? The corresponding concept is a good tool for ... and was established by...?

## <u>Valence Shell Electron Pair Repulsion Concept</u> $\rightarrow$ Predicting the shape/structure of molecules

It was established by Gillespie and Nyholm in the year 1957.

3. Give the shape, the type, and the psi-polyhedron/ geometry of  $CO_2$ ,  $NO_2^-$ ,  $NO_3^-$ ,  $SO_3^{2-}$ ,  $XeF_4$ ,  $PCI_5(g)$ ,  $SF_4$ .

For a molecule  $AX_m E_n$  (A = central atom, X = ligand atom, E = free electron pair ), X and E tend to minimize repulsion i.e., are arranged on the surface of a sphere around A forming simple polyhedra/geometric figures (E needs more space than X).







## For further information see www.shef.ac.uk/chemistry/vsepr