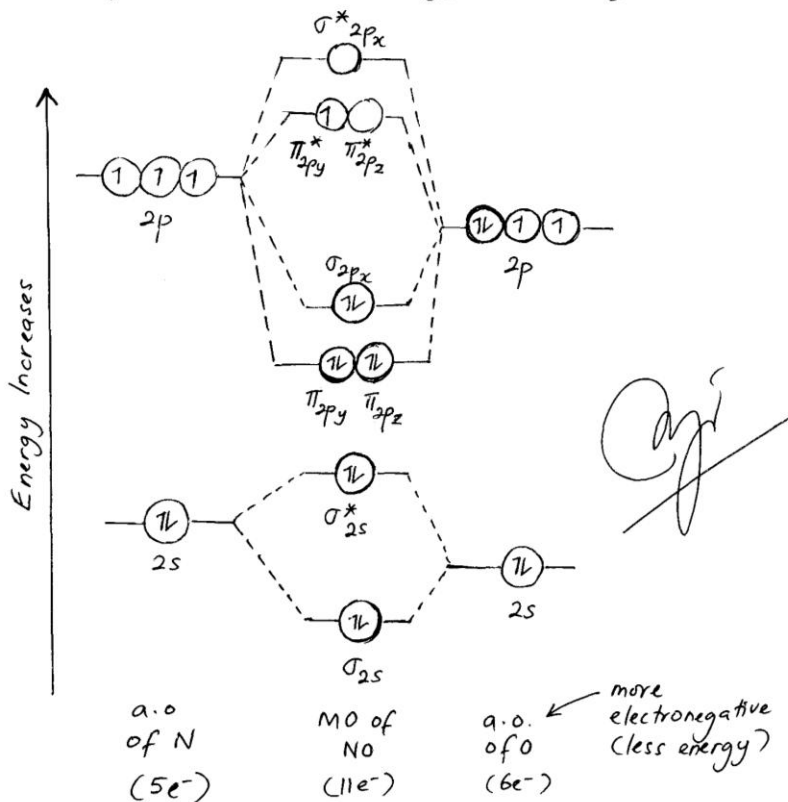
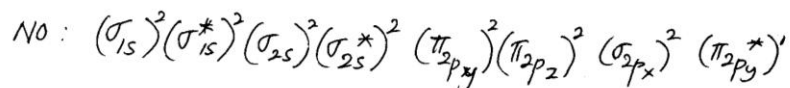


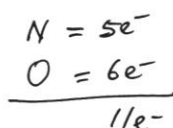
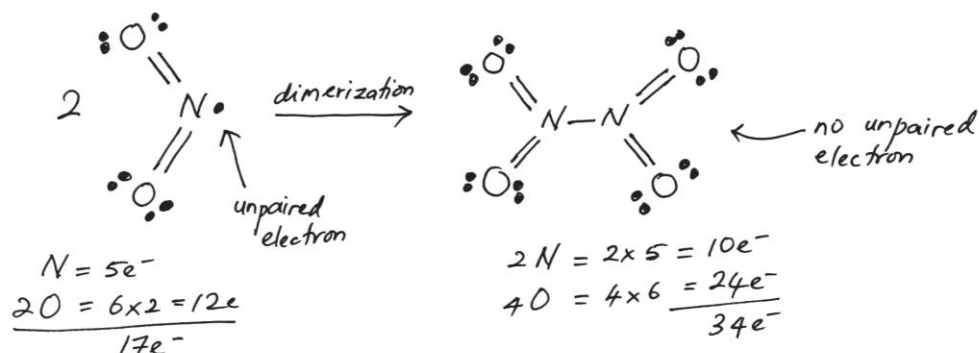
Sem 2 (2008/2009): Chemical Bonding:
 (MO Theory)

Q5(a) Molecular orbital energy level diagram of NO.



Condensed form :

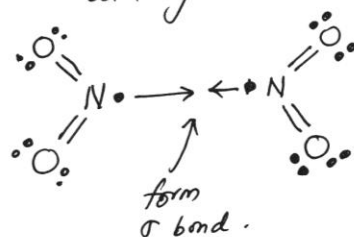


Sem 2 (2008/09) : VSEPR & VB THEORYQ5 (b) Lewis structure of NO_2 and N_2O_4 

NO has one unpaired electron - paramagnetic (has magnetic properties)

NO_2 also has one unpaired electron - paramagnetic

N_2O_4 - unpaired electron on each N (in NO_2) combined with another N atom to form a sigma bond - diamagnetic (no magnetic properties)



Q5(d) By applying the VSEPR theory, explain the planarity in solid N_2O_4 .

- VSEPR is based on electron domain
- Number of bonding domain - 3 around each N
OR 5 bonding domain in N_2O_4
- Number of non-bonding domain = 0
- Therefore based on VSEPR each N is planar trigonal
- Whole of N_2O_4 is therefore planar.

$\frac{1}{2}$

Sem 2 (2008/09) : VSEPR & VB THEORY

Q5 (d) cont.

Planarity of solid N_2O_4 also can be explained using Valence Bond, VB Theory.

- VB - based on orbital hybridization
- From Lewis structure of N_2O_4 , number of sigma bond on each N = 3
- Hybridization on each N is sp^2 .
- sp^2 - planar trigonal
- Whole of N_2O_4 is therefore planar.



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