SOLUTIONS

Year 12 Chemistry

Test: Elemental Chemistry 2

1.

(a) $1s^2\ 2s^2\ 2p^2$

(b)

(i) It is able to share its entire 2nd electron shell (2s and 2p) with a more electronegative element.

(ii) +2

(c) O = C = O

(d) The bond dipoles are in opposite directions (they cancel out)

2.

(a)

(i) Elements with lower electronegativity tend to form more basic oxides. Ca has a lower electronegativity than Si, therefore CaO will be a more basic oxide than SiO_2 and so will more readily react with H^+ to neutralise acidity.

(ii) s

(iii) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6$

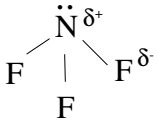
(b)

(i) amphoteric

(ii) $Cr_2O_3 + 2OH^- \rightarrow 2CrO_2^- + H_2O$

(iii) Non-metallic

3. (a) and (b)



(a) F has a greater electronegativity than N and therefore attracts the bonding electrons more strongly. This leads to a partial negative charge at the F end of the bond and a partial positive charge at the N end.

(b) Dipole-dipole attraction. The δ^+ in one molecule is attracted to the δ^- in the other molecule.

(c) +3

(d) N shares 3 of its valence electrons (1 with each F) and has a lower electronegativity than F.