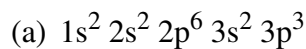


Year 12 Chemistry
 Elemental Chemistry
 Formative Test

1.

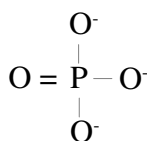


(b)

(i) Phosphorus may share all of the s^2p^3 electrons from the outer shell (expanding the octet) with something of higher electronegativity.

(ii) +3

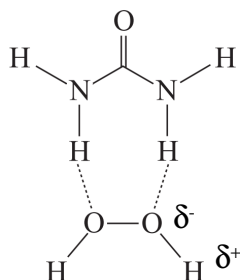
(c)



2.

(a)

(i)



(ii) O and H have different electronegativities.

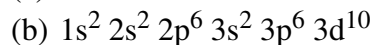
(b)

(i) Hydrogen bond

(ii) The H with a δ^+ is attracted to the O with a δ^- each in separate molecules.

3.

(a) d



(c)

(i) It is unlikely to be molecular. There is a large electronegativity difference between Ti and O so they are likely to form an ionic lattice.

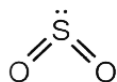
(ii) $\text{TiO}_2 + 2\text{OH}^- \rightarrow \text{H}_2\text{O} + \text{TiO}_3^{2-}$. (The Na may be present. The equation must be balanced)

(iii) Titanium oxide, by reacting with a base, displays an acidic nature. Acidic oxides are usually formed by non-metallic elements.

4.

(a) High

(b)



(c) The dipoles share a common direction (do not cancel out)

(d) SO_2 molecules are attracted by dipole-dipole forces (which is a relatively weak force).