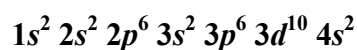


Marks
4

- Complete the following table. Give, as required, the formula, the systematic name, the oxidation number of the underlined atom and, where indicated, the principal ions present in a solution prepared by adding the substance to water.

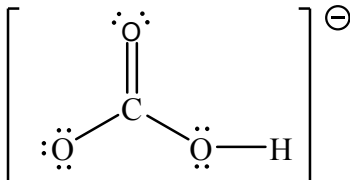
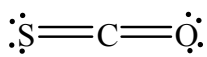
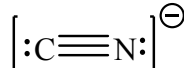
FORMULA	SYSTEMATIC NAME	OXIDATION NUMBER	PRINCIPAL IONS IN WATER SOLUTION
<u>N</u> O ₂	nitrogen dioxide	+IV	N/A
<u>Pb</u> (CH ₃ CO ₂) ₂	lead(II) acetate	+II	Pb²⁺(aq), CH₃CO₂⁻(aq)
Mg (<u>Cl</u> O ₄) ₂	magnesium perchlorate	+VII	Mg ²⁺ (aq); <u>Cl</u> O ₄ ⁻ (aq)

Write the full electron configuration of the As³⁺ ion.



5

- Draw the Lewis structures, showing all valence electrons for the following species. Indicate which of the species have contributing resonance structures.

HCO ₃ ⁻ 	COS 	CN ⁻ 
Resonance: <u>YES</u> / NO	Resonance: YES / <u>NO</u>	Resonance: YES / <u>NO</u>

2

- Name the two intermolecular forces, which best explain the difference in boiling points of 1-propanol (CH₃CH₂CH₂OH; bp = 97.2 °C) and 1-propanethiol (CH₃CH₂CH₂SH; bp = 67.8 °C).

Hydrogen bonding in 1-propanol (strong)

Dipole / dipole forces in 1-propanethiol (relatively weak)