

**Marks**  
**5**

- Complete the following table. Give, as required, the formula, the systematic name, the oxidation number of the underlined atom and, where indicated, the number of *d* electrons for the element in this oxidation state.

FORMULA	SYSTEMATIC NAME	OXIDATION NUMBER	NUMBER OF <i>d</i> ELECTRONS
$\underline{\text{S}}\text{O}_3$			
$\text{K}\underline{\text{Mn}}\text{O}_4$			
$\underline{\text{Co}}\text{Cl}_2 \cdot 6\text{H}_2\text{O}$			
	ammonium sulfate		

**4**

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

$\text{NO}_3^-$	$\text{CO}_2$	$\text{N}_2\text{H}_2$
Resonance: YES / NO	Resonance: YES / NO	Resonance: YES / NO

**2**

- A sample of carboxypeptidase (an enzyme) was purified and found on analysis to contain 0.191% by weight of zinc. What is the *minimum* molecular weight of the enzyme if we assume it is a monomer?

Answer:	