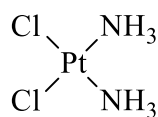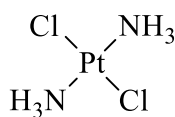- Use the information already provided to complete the following table.
  (ox = oxalate = $C_2O_4^{2-}$)

Marks
8

Formula	$[CrCl_2(NH_3)_4]^n$	$[Fe(ox)_3]^n$	$[ZnCl_2(NH_3)_2]^n$
Oxidation state of transition metal ion	**+III**	**+III**	**+II**
Number of d-electrons in the transition metal ion	**3**	**5**	**10**
Number of unpaired d-electrons in the transition metal ion	**3**	**5**	**0**
Charge of complex (*i.e.* n)	**1+**	**3-**	**0**
Is the metal atom paramagnetic?	**Yes**	**Yes**	**No**

The complex $[PtCl_2(NH_3)_2]$ has two isomers, while its zinc analogue (in the table) exists in only one form. Using diagrams where appropriate, explain why this is so.

The Pt compound has square planar geometry and hence 2 isomers, where the Cl groups are either opposite each other (*trans*) or next to each other (*cis*). The Zn compound has tetrahedral geometry and hence only one structure exists

          cis-isomer   *trans*-isomer