

Marks
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- Which of the cations, $[\text{Fe}(\text{OH}_2)_6]^{3+}$ and $[\text{Fe}(\text{OH}_2)_6]^{2+}$, has the larger $\text{p}K_a$? Briefly explain why.

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- Consider the compound $[\text{CrCl}(\text{OH}_2)_4(\text{NCS})]\text{Cl}\cdot 2\text{H}_2\text{O}$.

What is the oxidation state of the transition metal ion?

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What is the coordination number of the transition metal ion?

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How many *d*-electrons in the transition metal ion?

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List all the ligand donor atoms.

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- Consider the complexes *cis*- $[\text{PtCl}_2(\text{NH}_3)_2]$ and *trans*- $[\text{PtCl}_2(\text{NH}_3)_2]$. Draw the structures of the two isomers, clearly illustrating the stereochemistry.

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Briefly suggest why *cis*- $[\text{PtCl}_2(\text{NH}_3)_2]$ is an effective anti-cancer drug, but *trans*- $[\text{PtCl}_2(\text{NH}_3)_2]$ is not.

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