

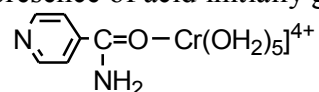
Tutorial Questions-5

1) Order the following species with increasing rate constants for the water exchange reaction:
i) $[\text{Cr}(\text{H}_2\text{O})_6]^{2+}$ ii) $[\text{Ir}(\text{H}_2\text{O})_6]^{2+}$ iii) $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$ iv) $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$

2) Order the following species with increasing rate constants for the water exchange reaction correctly:
(a) $[\text{Cr}(\text{H}_2\text{O})_6]^{2+}$ (b) $[\text{V}(\text{H}_2\text{O})_6]^{2+}$ (c) $[\text{Zn}(\text{H}_2\text{O})_6]^{2+}$ (d) $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$

3) The reaction of Cr^{2+} with

in the presence of acid initially gives



Provide an explanation that is consistent with the fact.

4) What are the basic differences between inner-sphere and outer-sphere complexes?

5) Account for the relative values of the rate constants for the following electron transfer reactions in aqueous solution:

