

**NPTEL Inorganic chemistry of life – *Principles and perspectives***

**Week 3 - Assignment 3**

**W3\_01.** An iron-protein is given to you. By choosing only one spectroscopy instrument, how will you establish whether the iron ion in the given protein is in +2 or +3 and whether it is in low spin or high spin unambiguously? **Which** spectroscopy instrument will you choose and **how** will you establish both the oxidation state and spin state of iron in that protein.

**W3\_02.** In a metalloprotein you were told that the metal ion is bound to His-51 and Glu-55, but you are asked to prove this. You are given a wet biochemical, biological & microbiology based lab. What is your strategy and how will you prove this?

**W3\_03.** You are given a metalloprotein and an absorption spectrophotometer and a wet chemistry lab. What all can you obtain by using all these & how?

**W3\_04.** You are given a metalloprotein containing  $\text{Cu}^+$  and you were asked to find how many histidines are bound to that metal ion center in that protein. You are given only one spectroscopy instrument (you decide which one you want!) and a wet chemistry lab.

**Which** spectroscopy instrument will you choose for this activity and **How** you are going to establish the number of histidines bound to  $\text{Cu}^+$  center in that given protein?