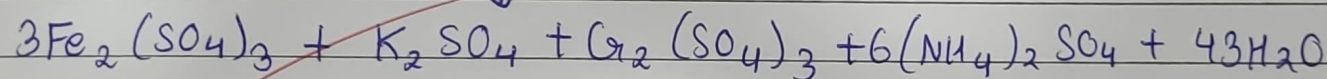
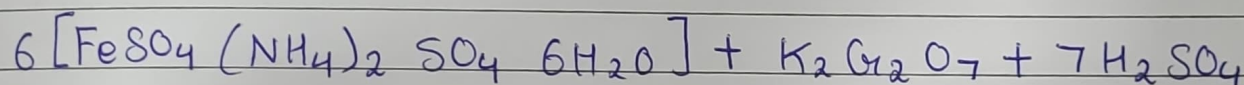


## Experiment - 4

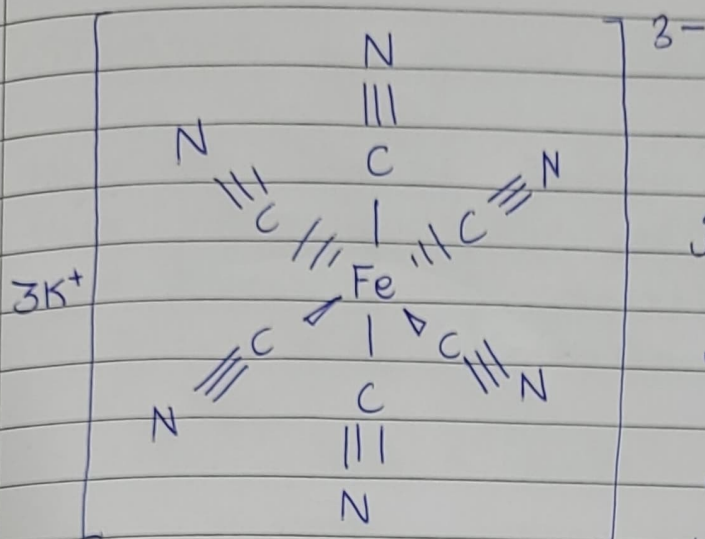
\* Estimation of FAS using external indicator.

→ Objective: To determine strength of unknown ferrous ammonium sulphate by titrating against standard  $K_2Cr_2O_7$  using potassium ferricyanide as external indicator.

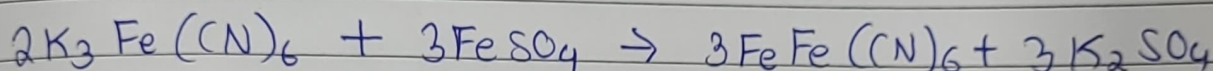
→ Principle: Ferrous ammonium sulphate is also known as Mohr's salt used to determine amount of ferrous ions present in a sample by oxidizing them to Ferric ions through titration with potassium dichromate in acidic medium.



To identify endpoint, freshly prepared potassium ferricyanide indicator is used as it turns blue in presence of  $Fe^{+2}$ . At end point, all  $Fe^{+2}$  ions are oxidised to  $Fe^{+3}$  & indicator color turns to light brownish yellow.



The indicator cannot be added to solution being titrated, instead it is placed on a white tile. As long as ferrous ions are present indicator turns blue.



At endpoint all Fe<sup>+2</sup> ions are oxidised to Fe<sup>+3</sup> ions & indicators colour change to light brown

→ Observation & Calculation

Estimation of Unknown FAS soln

Sr. No	Vol of FAS soln taken	Burette Reading		K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> consumed	Avg
		Initial	Final		
1	10	0	5	5	5.10
2	10	5.3	10.5	5.2	
3	10	14.3	19.3	5	

Teacher's Signature \_\_\_\_\_



## • ESTIMATION of ferrous ammonium sulphate.

 $N_3 = \text{Normality of Unknown FAS sol}^n = \text{Unknown}$  $V_3 = \text{Vol}^n \text{ of FAS sol}^n = 10$  $N_4 = \text{Normality of } K_2Cr_2O_7 \text{ sol}^n = 1140$  $V_4 = \text{Vol}^n \text{ of } K_2Cr_2O_7 \text{ sol}^n = 5.1$ 

$$N_1 V_1 = N_2 V_2$$

$$N_2 = \frac{V_1 N_1}{V_2} = 0.01275 N$$

$$\begin{aligned} \text{Strength} &= N_3 \times 392 \text{ g/L} \\ &= 4.998 \text{ g/L} \end{aligned}$$

Note: Equivalent weight of FAS = 392

→ Result: Strength of given unknown ammonium sulphate sol<sup>n</sup> is 4.998 g/L