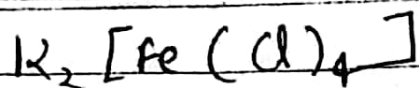


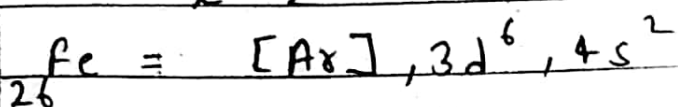
Q) CFSE in tetrahedral?

Date

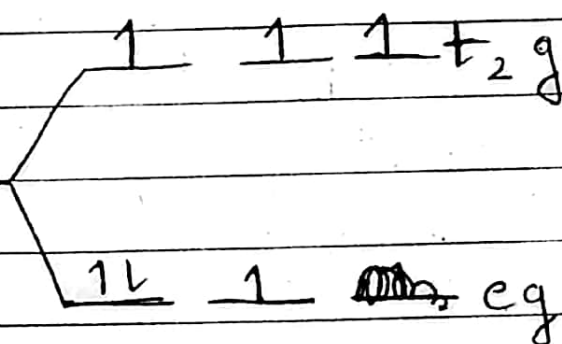
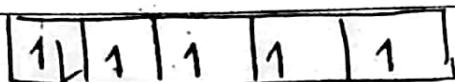
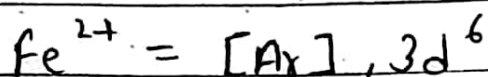


$$2 + x - 4 = 0$$

$$x = 2$$



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$$CFSE \text{ in tetrahedral} = -0.6 t_2n + 0.4 e_n + mp$$

$$= -0.6 \times 3 + 0.4 \times 3 + 1 \times 3$$

$$= -1.8 + 1.2 + 3$$

$$= 4.2 - 1.8$$

$$= 2.4 \text{ K Cal}$$

Magnetic Properties :-

Complex compound show following type of magnetic properties -

- i) Para magnetic
- ii) Diamagnetic
- iii) Ferro magnetic

1) Para magnetic Properties -

⇒ When compound having atleast one unpaired e^- and show attraction towards magnets (magnetic field) to become stable.

⇒ When no. of unpaired e^- ↑ then ↑ paramagnetic character and nature.

⇒ When magnetic moment ↑ then ↑ para magnetic character and Vice Versa.

Para magnetic properties having same curie temperature (temp. at which para magnetic substance converted into ferromagnetic substance and Vice Versa).

eg → $K_4[Fe(CN)_6]$, $K_4[Ni(CN)_6]$,
 $K_4[Cu(CN)_6]$, $K_2[Cu(CN)_6]$ etc.

2) Diamagnetic Properties -

⇒ When compound having only paired e^- hence can't be attracted towards magnet i.e., having zero magnetic moment.

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⇒ When magnetic moment $\uparrow$ then $\downarrow$ diamagnetic character and Vice Versa.

⇒ When no. of unpaired e^- $\uparrow$ then $\downarrow$ diamagnetic character and Vice Versa.

eg. $\rightarrow K_4[Fe(CN)_6]$, $K_2[Fe(CN)_4]$,
 $K_4[Fe(CO)_6]$, $K_5[Fe(CO)_5]$, $[Fe(Cr)_6]$.

For Even -

N.B $\Rightarrow$ When no. of CO (carbon monoxide) attach with metal = atomic no. of next higher inert gas atom of metal.

eg. $\rightarrow$

$$CO \text{ attach with Fe} = \frac{36 - 26}{2} = \frac{10}{2} = 5$$

$$Cr \text{ attach with Fe} = \frac{36 - 24}{2} = \frac{12}{2} = 6$$

For Odd (multiply 2) -

N.B $\Rightarrow$ Write σ , π and co-ordinate bond in carbonyl of cobalt.

$$\text{No. of CO} = \frac{36 - 27}{2} = \frac{9}{2}$$

$$= \frac{36 \times 2 - 27 \times 2}{2}$$

$$= \frac{72 - 54}{2}$$

$$= \frac{18}{2} = 9$$

$$= CO_2 (CO)_9$$

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