Tetrahedral CFSE table :-

*All ligands treated as weak ligands in Tetrahedral complex

d	Configuration (e, t_2)	CFSE	μ_s (B.M)
d^0	$\Rightarrow e^0 t_2^0$	0	0
d^1	$\Rightarrow e^1 t_2^0$	0.6	1.73
d^2	$\Rightarrow e^2 t_2^0$	1.2	2.83
d^3	$\Rightarrow e^2 t_2^1$	0.8	3.87
d^4	$\Rightarrow e^2 t_2^2$	0.4	4.89
d^5	$\Rightarrow e^2 t_2^3$	0	5.92
d^6	$\Rightarrow e^3 t_2^3$	0.6	4.89
d^7	$\Rightarrow e^4 t_2^3$	1.2	3.87
d^8	$\Rightarrow e^4 t_2^4$	0.8	2.83
d^9	$\Rightarrow e^4 t_2^5$	0.4	1.73
d^{10}	$\Rightarrow e^4 t_2^6$	0	0

$$CFSE = [-0.6\Delta_t \cdot n_e] + [0.4\Delta_t \cdot n_{t_2}] \quad [\because t_2 \uparrow \; e \downarrow]$$

For d^0 :- d^0 → t_2↑ (no. e⁻ in t_2 & eg) $\therefore e^0 t_2^0$; $e\downarrow$

$\therefore CFSE(d^0) = [[-0.6(0)] + [0.4(0)]]\Delta_t = 0$ & $\mu_s = \sqrt{n(n+2)} = \sqrt{0(0+2)} = 0$

For d^1 :- d^1 → t_2↑ $\therefore e^1 t_2^0$; 1 $e\downarrow$

$\therefore CFSE(d^1) = (-0.6(1) + 0.4(0))\Delta_t = -0.6\ kJ\ mol^{-1}$

& $\mu_s = \sqrt{1(1+2)} = \sqrt{3} = 1.73$

For d^2 :- d^2 → t_2↑ $\therefore e^2 t_2^0$; 1 1 $e\downarrow$

$\therefore CFSE(d^2) = (-0.6(2) + 0.4(0))\Delta_t = -1.2\ kJ\ mol^{-1}$

& $\mu_s = \sqrt{2(2+2)} = \sqrt{8} = 2.83$

For d^3 :- d^3 → t_2 ↑ ↑ ↑ ; e ↓ ↓ $\therefore e^2 t_2^1$

$\therefore CFSE = (-0.6(2) + 0.4(1))\Delta_t = -1.2 + 0.4 = -0.8\ kJ\ mol^{-1}$

& $\mu_s = \sqrt{3(3+2)} = \sqrt{15} = 3.87$

For d^4 :- d^4 → t_2 ↑↑ ↑ ; e ↓ ↓ $\therefore e^2 t_2^2$

$\therefore CFSE = (0.6(2) + 0.4(2))\Delta_t = -1.2 + 0.8 = -0.4\ kJ\ mol^{-1}$

& $\mu_s = \sqrt{4(4+2)} = \sqrt{24} = 4.89$

For d^5 :- d^5 → t_2 ↑↑↑ ; e ↓ ↓ $\therefore e^2 t_2^3$

$\therefore CFSE = (-0.6(2) + 0.4(3))\Delta_t = -1.2 + 1.2 = 0$

& $\mu_s = \sqrt{5(5+2)} = \sqrt{35} = 5.92$

For d^6 :- d^6 → t_2 ↑↑↑ ; e ↓↑ ↑ $\therefore e^3 t_2^3$

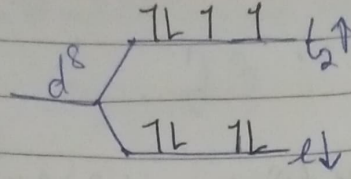
$\therefore CFSE = (-0.6(3) + 0.4(3))\Delta_t = -1.8 + 1.2 = 0.6\ kJ\ mol^{-1}$

& $\mu_s = \sqrt{4(4+2)} = \sqrt{24} = 4.89$ [No. of unpaired $e^- = 4$]

For d^7 :- d^7 → t_2 ↑↑↑ ; e ↓↑ ↓↑ $\therefore e^4 t_2^3$

$\therefore CFSE = (-0.6(4) + 0.4(3))\Delta_t = -2.4 + 1.2 = -1.2$

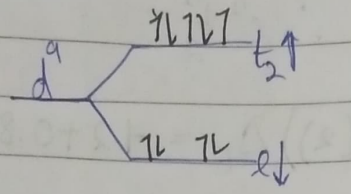
& $\mu_s = \sqrt{3(3+2)} = \sqrt{15} = 3.87\ kJ\ mol^{-1}$

For d^8 :- 

$\therefore e^4 t_2^4$

$\therefore CFSE = (-0.6(4) + 0.4(4))\Delta_t = -2.4 + 1.6 = -0.8\ kJ\ mol^{-1}$

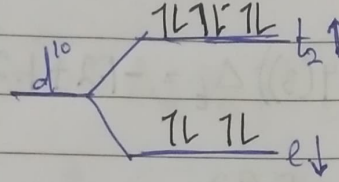
& $\mu_S = \sqrt{2(2+2)} = \sqrt{8} = 2.83$

For d^9 :- 

$\therefore e^4 t_2^5$

$\therefore CFSE = (-0.6(4) + 0.4(5))\Delta_t = -2.4 + 2.0 = -0.4$

& $\mu_S = \sqrt{1(1+2)} = \sqrt{3} = 1.73$

For d^{10} :- 

$\therefore e^4 t_2^6$

$\therefore CFSE = (-0.6(4) + 0.4(6))\Delta_t = -2.4 + 2.4 = 0$

& $\mu_S = \sqrt{0(0+2)} = 0$

* **Magnetic Moment** :- (Unit :- B.M (or) J/T)

$$\mu_S = \sqrt{n(n+2)}$$

here, $n \rightarrow$ no. of unpaired e^- in t & t_2 (tetra) | e_g & t_{2g} (octa)

For Octa :- e_g & $t_{2g} \Rightarrow (-0.4(n_{t_{2g}}) + 0.6(n_{e_g}))\Delta_o$

v/s

For Tetra :- e & $t_2 \Rightarrow (-0.6(n_e) + 0.4(n_{t_2}))\Delta_o$