c) * Predicting the thermodynamic stabilities on basis of IE:- Smaller the IE of metal, greater will be the thermodynamic stability of its compound.

	$\Delta_i H_1 + \Delta_i H_2$	$\Delta_i H_3 + \Delta_i H_4$	—
Ni	2.49×10^3 KJ mol^{-1}	8.8×10^3 KJ mol^{-1}	11.29×10^3
Pt	2.66×10^3 KJ mol^{-1}	6.70×10^3 KJ mol^{-1}	9.36×10^3

∴ Ni^{2+} is more stable than Pt^{2+} since IE for formation of Ni^{2+} ion is less than Pt^{2+} ion. whereas Pt^{4+} is more stable than Ni^{4+} since value of formation of Pt^{4+} ion is less than for Ni^{4+} ion

d) Oxidation States - Table 8-3

i) Characteristics property of Transition element is their ability to exhibit several OS becoz of incomplete filling of d-orbitals.

ii) Lower OS is exhibited when ns electrons participate in bonding and higher OS are shown when ns and (n-1)d electrons take part in bonding.

iii) Oxidation state in Transition elements differ from each other by unity, eg. V^{II}, V^{III}, V^{IV}, V^{V}. as compared to non-transition elements which differ by unit of two.

iv) In the +2 and +3 Oxidation states, transition elements generally form ionic bonds. while higher oxidation state follows covalent bond. But higher OS are attained only with elements of high electronegativity like F or O.
Ex: CrO_4^{2-}, MnO_4^-.

v) In the case of p-block the lower OS are favored by heavier members (inert pair effect), the opposite is true in the groups of d-block. For example, in group 6, Mo (VI) and W (VI) are ~~to~~ found to be more stable than Cr (VI). Thus Cr (VI) in dichromate ion: in more acidic medium is a strong oxidising agent, whereas MoO_3 and WO_3 are not.

vi) zero or low OS are found when a complex compound has ligands capable of π-acceptor character in addition to the σ-bonding. For ex: $Ni(CO)_4$ and $Fe(CO)_5$ has ~~0~~ zero ~~ox~~ oxidation state for Metals

vii) In halides, lower oxidation state are unstable. Ex: CuX is unstable than CuX_2. Oxygen has a greater ~~of~~ capacity to stabilise the highest OS ~~than~~ as compared to fluorine due to ability of oxygen to form multiple bond which is absent in case of fluorides.

Table 8.3: Oxidation States of the first row Transition Metals (the most common ones are in bold types)

Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
	+2	+2	+2	**+2**	**+2**	**+2**	**+2**	+1	**+2**
+3	+3	+3	**+3**	+3	**+3**	**+3**	+3	**+2**	
	+4	+4	+4	+4	+4	+4	+4		
		+5	+5	+5					
			+6	+6	+6				
				+7					