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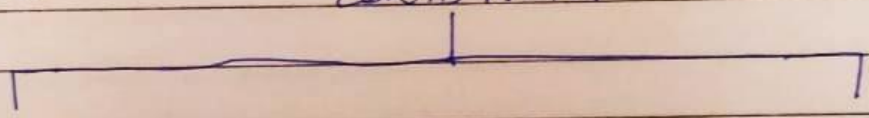
Degree III B.Sc. Chemistry
Topic - Hard And Soft Acid And Base (HSAB)

Classification of Acid and base as hard and soft:

Classification of the Lewis acid:-

According to the Pearson Lewis's acid can be the three different types, which are given below:-



1) Hard acid - All the Lewis acid having the following Characteristic Properties are known as hard acid:-
   i) Should exhibit the smaller size
   ii) Should have high +ve oxidation state.
   iii) Polaris ability should be very low
   iv) Should have vacant d-orbital or approximate vacant d-orbital configuration

2) Soft acid - All the Lewis acid having the following characteristic

Properties are known as Soft acid.

i) Should exhibit larger size
ii) Should have very low +ve oxidation state or zero oxidation state.
iii) Polaris ability should be very high
(iv) Should have filled d-orbital or approximate filed d-orbital configuration.

Borderline acid – All the Lewis acid whic exhibit the properties intermediate in between the hard & soft acid are known as borderline acid.
ex- hard acid – Li^+, Na^+, K^+, Mg^{+2}
Al^{+3}, Ba^{+2}, Ga^{+3}, Cr^{+3}
Soft acid – Cu^+, Ag^{+2}, Au^{+2},
Hg^+, Pt^{+2}, Pd^{+2}
Borderline acid – Fe^{+2}, Co^{+2}, Ni^{+2}
Cu^{+2}, Zn^{+2}, Pb^{+2}, Sn^{+2}
SO_2, Bi^{+3}, Sb^{+3}, No^{+2}

To be continued- ~~