	HSAB Principle:
i.i.	the state of the s
*	Hard acids and Roses are small Courbail and
100 A 43	Hard acide and Bases are small, compact and
*	Soft gride and based are larger with a more
	Soft acide and bace are larger, with a more diffuse distribution of electrons
*	Hard acide are often metal ions with a higher
a de la companya della companya della companya de la companya della companya dell	positive charge and small ionic size.
	Positive charge and small ionic size.  Their d-orbitals are often unavailable to
	engage in A-sonding.
	O .
*	Soft a vide have lower charge density. Their densitals are available for 1. bonding.  often and a 3rd row transition metals with +1 or
- 10 to	d-orbitale are available for 1. bonding
	often and a 3rd row transition metals with +1 or
	+2 charge (and filled or nearly filled do
. A.	orsitale) are cost acids
	It is important to realize that hard soft
	It is important to realize that hard soft
	It is important to realize that hard soft Considerations have nothing to do with
	It is important to realize that hard soft  Considerations have nothing to do with  acid or base strength  "An acid or base may be hard or coft  and also be either weak or strong"
	It is important to realize that hard soft  Considerations have nothing to do with  acid or base itrength  "An acid or base may be hard or coft  and also be either work or stoons"  In a competition can between two
	It is important to realize that hard soft  Considerations have nothing to do with  acid or base strength  "An acid or base may be hard or coft  and also be either weak or strong"  In a competition ron between two  bases for the same acid, one must consider
	It is important to realize that hard soft  Considerations have nothing to do with  acid or base itrength  "An acid or base may be hard or coft  and also be either work or stoons"  In a competition can between two
	It is important to realize that hard soft  Considerations have nothing to do with  acid or base strength  "An acid or base may be hard or coft  and also be either weak or strong"  In a competition ron between two  bases for the same acid, one must consider
	It is important to realize that hard soft Considerations have nothing to do with acid or base may be hard or coft and also be either weak or strong"  In a competition ran between two bases for the same acid one must consider the relative strength of the bases, and the
	It is important to realize that hard soft  Considerations have nothing to do with  acid or base strength  "An acid or base may be hard or soft  and also be either work or storne"  In a competition ran between two  bases for the same acid one must consider  the relative strength of the bases and the  hard bift nature of each base and the acid  e.g. Hard-soft
	It is important to realize that hard soft  Considerations have nothing to do with  acid or base strength  "An acid on base may be herd or coft  and also be either weak or strong"  In a competition ran between two  bases for the same acid one must consider  the relative strength of the bases, and the  hard both nature of each base and the acid  e. 9.
*	It is important to realize that bord Soft  Considerations have nothing to do with  acid or base through  "An acid or base may be hard or Coft  and also be either weak or storne"  In a competition ran between two bases for the same acid one must consider  the relative strength of the bases and the hard before and the same acid base and the acid  e.g.   **Hard-Soft Strength of the base and the acid  200 + 2 Li Cy 49   Zno + 2 Li Cy 49   Zno + 2 Li Cy 49   Above on proceeds to
*	It is important to realize that hard soft  Considerations have nothing to do with  acid or base strength  "An acid or base may be hard or soft  and also be either weak or strong"  In a competition ran between two bases for the same acid one must consider  the relative strength of the bases and the hard both nature of each base and the acid  e.g. hard-soft strength of the base and the acid  2no + 2 Li Cytiq > 2n Ccytiq) + Lizo  I his/a strong lewic acid (But soft acid)  Right or hardfoot considerable
*	It is important to realize that bord Soft  Considerations have nothing to do with  acid or base through  "An acid or base may be hard or Coft  and also be either weak or storne"  In a competition ran between two bases for the same acid one must consider  the relative strength of the bases and the hard before and the same acid base and the acid  e.g.   **Hard-Soft Strength of the base and the acid  200 + 2 Li Cy 49   Zno + 2 Li Cy 49   Zno + 2 Li Cy 49   Above on proceeds to

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11	Page No Date
1	Hard Acids! Alkali metal ions, alkaline earth metal
	Hard Auds. Actal was to the large main
4	ions, light netal ions with no or lesser no of
	d-elections, or metal ions en ligher ordation
(try )	
	Ht At Not to
N.	Soft acides Metal jons with bigger size, metaling in lower oxidation states and metal ions with
. 2	in lower oxidation states and metal ions with
4	nearly filled ! d - orbitals.
	I will all the second
	Hard acids Soft acids
×1	1 + 1 + 7 1 1 +
V	Ret Nat kt Cut, Ag, Aw, 11, 49  Ret Nat kt Cd, Ag, Aw, 11, 49
A	A) 3+ S2+ G2 In, La Te, B43, GaI3
1	
	Cr, Fe, As
	Si4+ Ti4+ Zi4+ Th4+
11	I de la
31	to it is a real well to the second
	I Mark to bake the Mill C
· · ·	I de la companya della companya dell
	Hard acids are Lewis acids which are smellin
M. E. Ma	lize and whose et clouds are not so early
	polarisable
1 1	Soft acide are Lewie acide which are comparatively
.11	larger in lize and whose et clouds are
	ealty polaneable
1	
	The Late of the Late of the Commence of the Co

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	HEAR Principle and Its applications? Page No
	I dore
	the state of the s
	Stability of Complenes:
(	lewis lewis Complexo  acid Base
	Lewis Lewis Complex
k .	acid Base
8	C he Air is le moet Mable if A and B are
Victoria de la composición della composición del	Complex A:13 would be not blaste if A and B are either both hard or both soft. e.g. Ag I, is a stable
	eiker bold hard by some file of a service of the a
	Compound where as AgF is not. Because Ag+ is a
1 1	soft acid thus it forms a stable complex will
	soft saleie T and not will hard lake F.
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
	Softaid Soft (Stable)
The Astron	The state of the s
	Ag+ df - AgF_
	Agt + 2F AgF2  Agtaid Hard  Unitable
- A	Bylaco
- (a)	(natural) (on aly le explained
	Stability of diff tyles of over Can also be explained
	1.11
es ,	( * Most of the I' sow transition motals are
i.A.	icolated from oxide over sur appro-
	naturally in the form of suppose ores
	It u because of increase of soft character of
	It u because of increase of soft character of motal ione while joing from left to right in the
44.	Il Com A Do to A P M P Com
	> Due la increase in lost character, noit of the
4	and & 3rd now transition elements exist at the
1, 41	eulphide in rature
4-	
37.	
13.	

(2)	Predicting Fearibility of a non!  Hard end Concept can be used to  predict whether a given non will proceed to  browned (Mail) or backward (Mail) and
	Hard ed! concept can be used to
	predict whether a given non will proceed
	forward ( Night) or backward ( Left ) side eg
	Li I + Csf -> Lif + Cs I A4=-138k5  Hord syl Syl Lord hard-hard Syl-syt
10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Hord sigt Sigt hard hard-hard sigt-sigt
- 12 th	and the state of t
13 11 1	Hgfg + Be I, - Hg I, + Bef,
ile . w.li	Hgfg + Be I, Hg I, + Bef, III bard Lord Styl
	The state of the s
(3)	Rediction of hardness and Cottons
4	
	Consider a base B whose lardness or Affres is
	to be predicted of
	Cu M 7 t
	[BH+] + [C43 Mg] = C43 MgB] + H  Soft and Hard and
As Asia	Soft and Hard and
	If the equilibrium shifts to the right then
	B is a lost bale and vice-Versa
	R-014 P
N.	Basis for Hard-hard and Soft-Soft Jilerache
A	Hard and hard herd
	ionic bond. Since the electrostatic force of
10%	botween the ions. Therefore em 100 to the
4 /	botween the ions. Therefore smaller the formal lever would be the internuclear distance and greater would be the electrotation of the contraction
No.	()
	attraction
	Bil this could be true in case of left- left interactions as sole y there ions are leger
	lot interactions as sole of the ions are loge

/ Page No	
ion lize bil lorge fierd ions can be easily	The second second
 folorised & Moil of-le soft ainds have 6-10 des	-
which can be easily polarised.	-
Thus sondy in soft and - Sales is	
largely covalent in nature.	_
	,
	_
	_