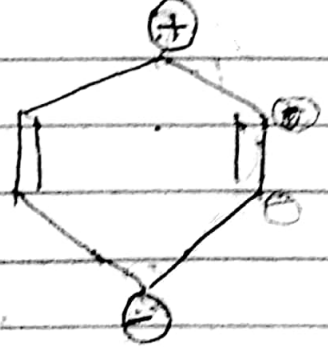
* Aromatic compound :—

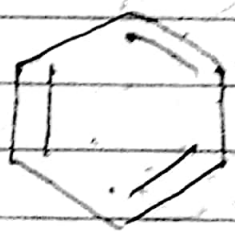
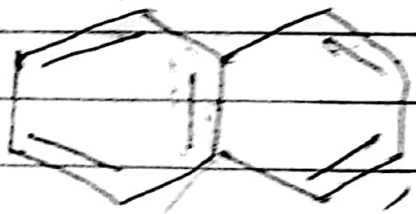
Condition for aromatic Compound

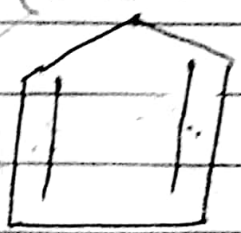
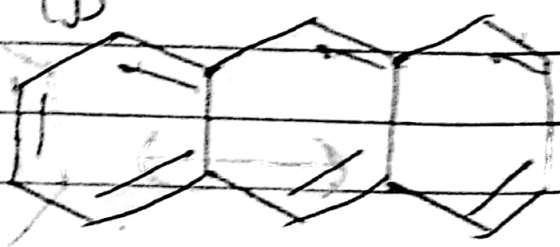
(I) compound must be cyclic (ring)
(II) All atom. Sp^2 (coplanar).
(III) Must obey Huckel's rule $(4n+2)\pi e^-$.

→ No. of Pi (π) electrons :⇒ 2 × no. of double bond.

→ When -q or Ⓑ lone pair ⊙⊙ separated from double bond by Single bond then -q or ⊙⊙ acts as two Pi electrons.

eg (a) 

, (b) 
, (c) 
,

(d) 
, (e) ⊖ 
, (f) 
,

$4n+2$ $3-sp^2$

$4\times1+2$

(a) → Cyclic
→ All C, sp^2
→ 6πe if
n = 1, in H-R
then obey
aromatic compound.

(b) → Cyclic
→ All, C, sp^2
→ 6πe if
n = 1,
$\therefore (4n+2)\pi e$
$(4\times1+2) = 6\pi e$
then obey aroma-
-tic compound.

(c) → cyclic
→ All C, sp^2
→ 10πe,
n = 2,
$\therefore (4n+2)\pi e$
$(4\times2+2) = 10\pi e$
hence aromatic.

(d) → Cyclic
→ All C, sp^2
→ 6πe, n = 1
$\therefore (4\times1+2)\pi e$
$= 6\pi e$,
hence aromatic

(e) → cyclic.
→ All, C, sp^2
→ 6πe, if
n = 1
$\therefore (4\times1+2)\pi e$
$= 6\pi e$
hence aromatic

(f) → Cyclic
→ All, C, sp^2
→ 14πe, if
n = 3,
$\therefore (4\times3+2)\pi e$
$= 14\pi e$.
hence aroma-
-tic compound

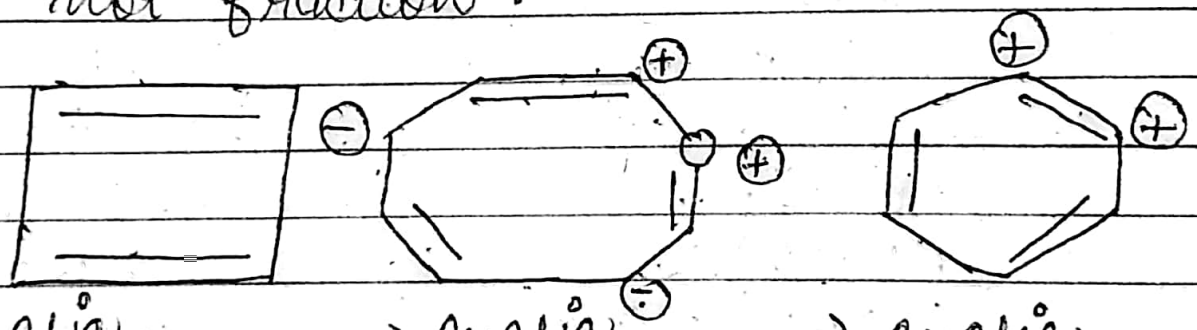
Stability order $\propto \frac{1}{\text{Reactivity}}$

(2) ~~Non-aromatic~~
Antiaromatic compound

Condition for antiaromatic

(i) cyclic
(ii) sp^2
(iii) Obey $4n\pi e$. n = +ve integer, not fraction.

eg.



→ cyclic
→ sp^2
→ $4\pi e$, $n=1$
$4n\pi e$

→ cyclic
→ sp^2
→ $8\pi e$, $n=2$
→ $4\times2\pi e = 8\pi e$

→ cyclic
→ sp^2
→ $4\pi e$, $n=1$
$\therefore 4\times1 = 4\pi e$
Antiaromatic