ABMO

H- Atom $\boxed{\uparrow}$
'A'
$1s'$

$\boxed{\uparrow}$ $1s'$

H- Atom
'B'

$\boxed{\uparrow\downarrow}$

B.MO

If 10 atoms of 'H'

ABMO (5)

Energy ↑

BMO (5)

Hence N atomic orbitals → $\frac{N}{2}$ BMO

$\frac{N}{2}$ ABMO

For instance, 100 AO - H atom

100 AO'
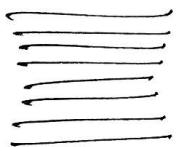
≡≡≡≡ (energy levels) 50 ABMO
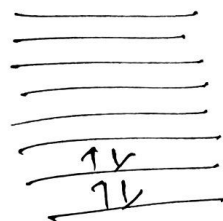
≡≡≡≡ 50 BMO } Band

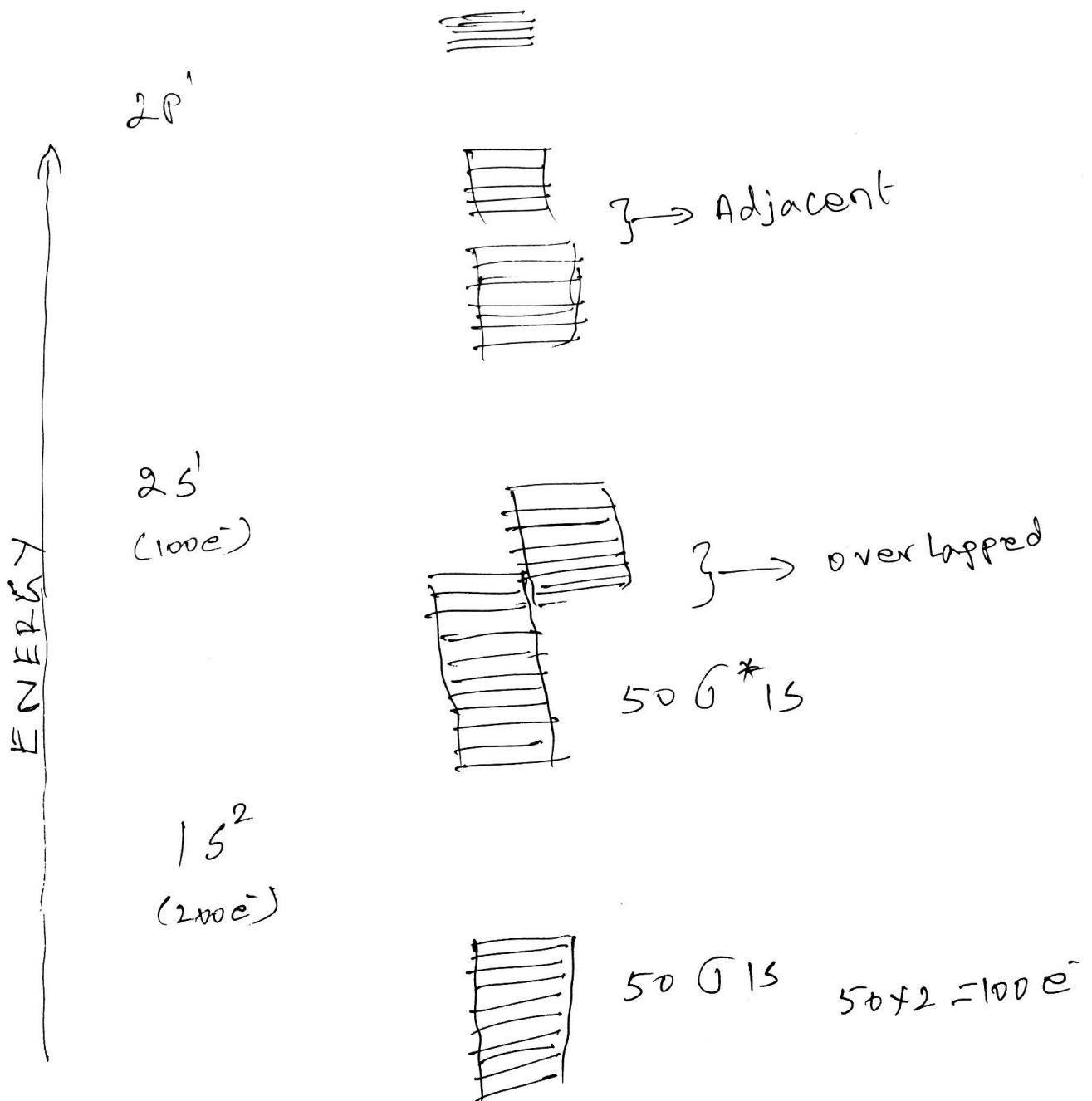↑↓
↑↓

Number of electrons

1s¹   100×1 = 100 e⁻

Filled valency Band (50×2 = 100 e⁻)

Empty conduction Band

I- group   Li & Na

Li — $1s^2$ $2s^1$ $2p^0$

Na — $1s^2$ $2s^2$ $2p^6$ $3s^1$ $3p^0$

Li – 100 Atoms

$2p^1$

$2s^1$
(100 e^-)

E N E R G Y

$1s^2$
(200 e^-)

$\}\rightarrow$ Adjacent

$\}\rightarrow$ overlapped

50 $\sigma^{*}1s$

50 $\sigma 1s$ $50 \times 2 = 100 \, e^-$

Be and Mg

Be — $1s^2\ 2s^2\ 2p^0$ ✓

Mg — $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^0$

100 Atoms

$2p^0$

σ^*2p

$\sigma 2p$ ⟶ overlapped

σ^*2s 100 e^- Filled

$2s^2$
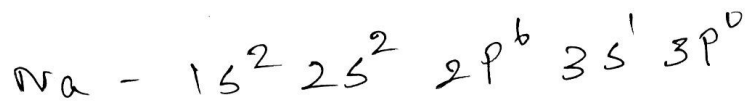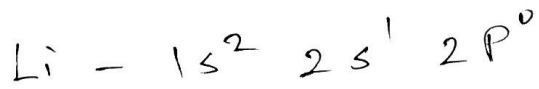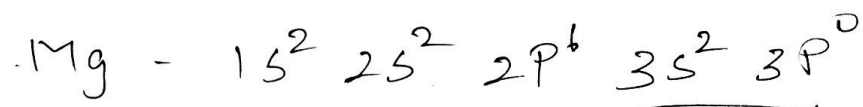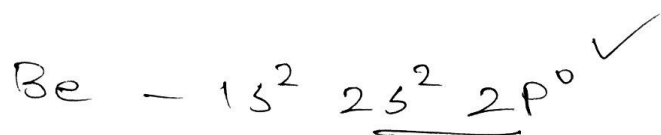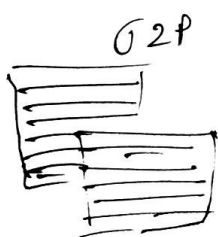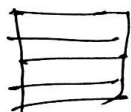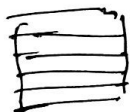
$\sigma 2s$ 100 e^-

$50\sigma^*1s$ 100 e^-

$1s^2$

200 e^-

$50\sigma 1s$ 100 e^-