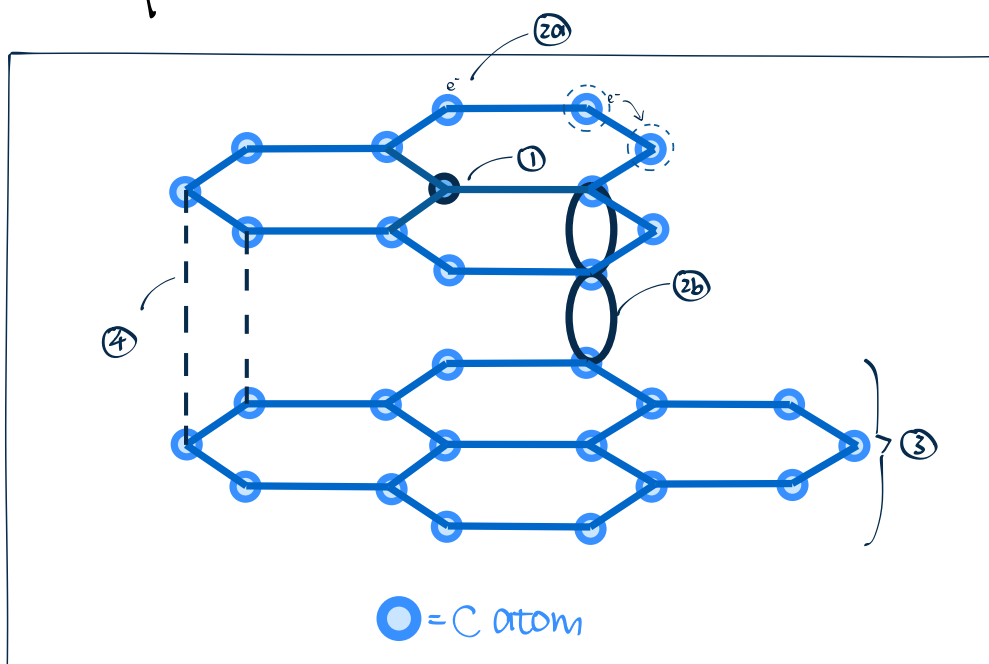


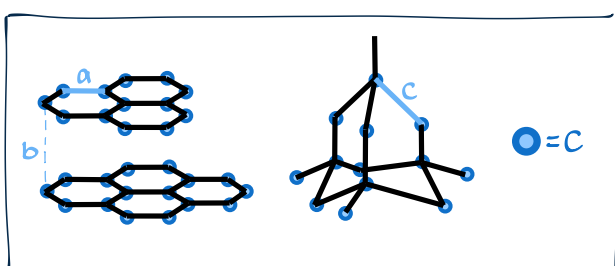
Graphite

1 Properties



- ① Covalent bonds
 - Each C atom shares 3 bonding e^- w/ neighbouring atoms
- ② The unbonded electron
 - a. The unbonded outermost shell e^- is delocalised.
It can move across & between layers. \rightarrow electrical conductivity
 - b. 'p' shaped orbital allows it to move between layers
 - c. It can sometimes form covalent bonds w/ atoms \rightarrow partial double bond
- ③ Graphene
 - Graphene = 1 single layer of graphite
- ④ VDW forces
 - Weak VDW forces exist w/ 2 layers \rightarrow allow graphene layers to slide over each other.
 - Graphite is used as pencil / lubricant.

2 Example question



Compare distances a, b, c.

- force \rightarrow
- F_a & F_c, F_b :
- a, c: covalent bond
 - b: VDW force
 - break VDW require ∇ energy than bond
 - $F_{a,c} > F_b$

F_a, F_c :

- a: C-C partial double bond
- c: C-C single bond
- \rightarrow bond strength of partial double $>$ single
- $F_a > F_c$

$$\text{Distance} \propto \frac{1}{\text{force}}$$

$$\therefore a < c < b$$