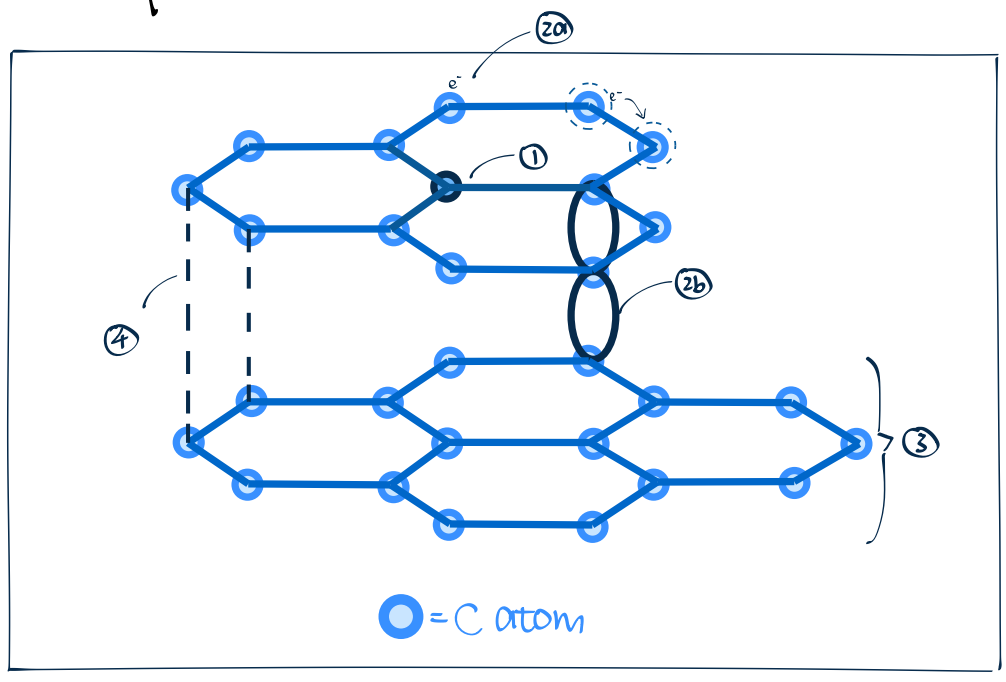
# Graphite

## 1 Properties



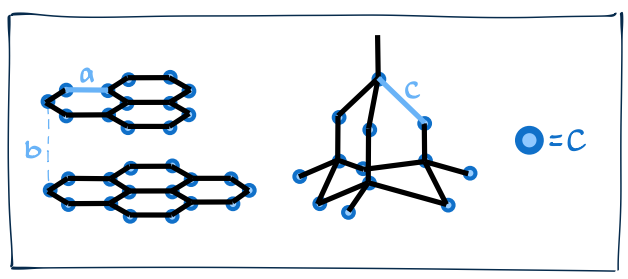

① Covalent bonds
- Each C atom shares **3 bonding e⁻** w/ neighbouring atoms

② The unbonded electron
a. The unbonded outermost shell e⁻ is **delocalised**.
It can move **across & between layers**. → **electrical conductivity**
b. '8' shaped orbital allows it to move between layers
c. It can **sometimes** form covalent bonds ⅟ atoms → **partial double bond**

③ Graphene
- **Graphene = 1 single layer** of graphite

④ VDW forces
- **Weak VDW forces** exist ⅟ 2 layers → allow graphene layers to **slide over each other.**
- Graphite is used as **pencil / lubricant.**

## 2 Example question




Compare distances a, b, c.

force →

$F_a$ & $F_c$, $F_b$ :
- 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

→ bond strength of partial double > single
- $F_A > F_c$

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

$\therefore a < c < b$