

Question 25 (Answer: **A**)

- A halogen displaces a halide only if the halogen is *higher* in Group VII.
- Chlorine is above bromine and above iodine, so it displaces both.
- Iodine is below bromine, so it cannot displace bromide.

Question 24 (Answer: **B**)

- Down Group VII the elements get darker and change from gas to liquid to solid.
- Iodine is the last of the common halogens, so it is a solid.
- It is grey-black with a shiny lustre – its *vapour* is the purple one.

Question 22 (Answer: **C**)

- Atomic number, density and melting point all *increase* down Group VII.
- Reactivity decreases, because a larger atom attracts an extra electron less strongly.
- So chlorine is more reactive than iodine.

Question 23 (Answer: **D**)

- Down Group VII the elements change from gas (F₂, Cl₂) to liquid (Br₂) to solid (I₂).
- Astatine is already a solid, and tennessine is below it.
- So tennessine is expected to be a solid at room temperature.

Question 24 (Answer: **B**)

- A more reactive halogen displaces a less reactive one from its salt.
- Chlorine is above bromine, so chlorine takes the electrons and bromine is set free.
- It is the *element* chlorine that does the displacing and the *element* bromine that appears.

Question 26 (Answer: **A**)

- Down Group VII the elements get darker and denser, changing from gas to liquid to solid.
- So tennessine would be a dense black solid at room temperature.
- But reactivity *decreases* down the group, so it would be less reactive than iodine.

3(a)	VII
3(b)	6
3(c)(i)	tennessine / Ts / Ts ₂
3(c)(ii)	fluorine / F / F ₂
3(d)	halide(s)
3(e)	4
3(f)	krypton
3(g)(i)	Cl ₂ + 2I ⁻ → 2Cl ⁻ + I ₂ M1 Cl ⁻ M2 correct ionic equation
3(g)(ii)	M1 I ⁻ loses e ⁻ M2 Cl ₂ gains e ⁻
3(h)	M1 grey-black M2 solid