

Chemical Energetics

Exothermic	Endothermic
<p>Release Heat temp ↑</p> <p>$\Delta H = (-)$</p>	<p>Absorb Heat temp ↓</p> <p>$\Delta H = (+)$</p>

ΔH : the enthalpy change.

Bond energy equation

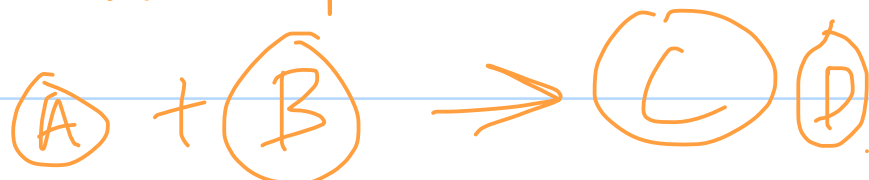
$$\Delta H = E_B - E_F$$

reactant

products.

if $\Delta H = (+)$, endo

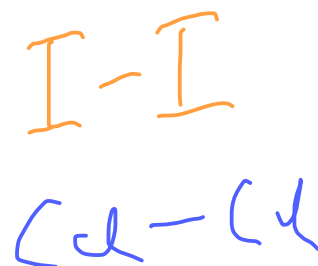
if $\Delta H = (-)$, exo



- (d) Calculate the overall energy change for the reaction between iodine and chlorine using the bond energy values shown.



Bond	Energy / kJ per mol
I-I	151
Cl-Cl	242
I-Cl	208

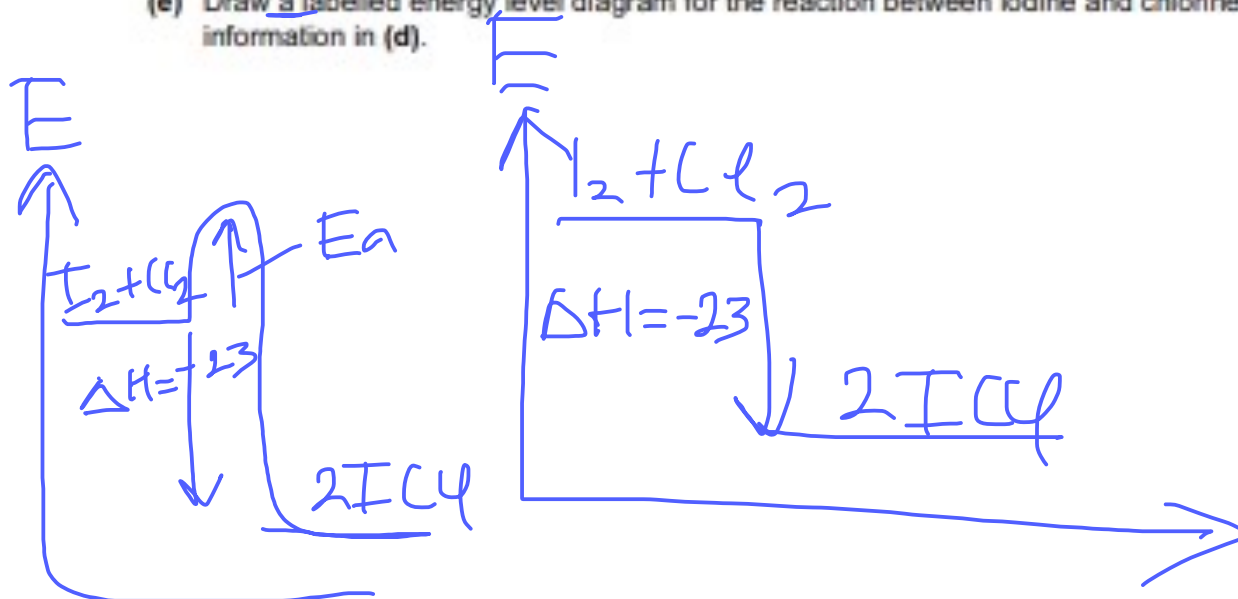


Show your working.

$$\begin{aligned}
 E_B &= 151 + 242 \\
 &= 393 \\
 E_F &= 2 \times 208 = 416 \\
 \Delta H &= E_B - E_F \\
 &= 393 - 416 \\
 &= -23
 \end{aligned}$$

[3]

- (e) Draw a labelled energy level diagram for the reaction between iodine and chlorine using the information in (d).



[2]

[Total: 10]

