8. Study the diagram below and answer the questions that follow.
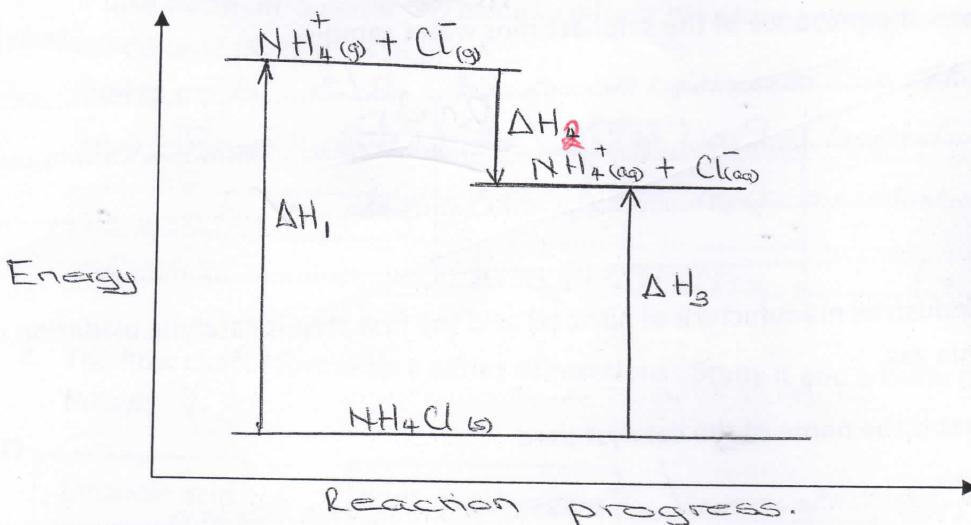
(a) What do ΔH_1 and ΔH_2 represent (2mks)

i) ΔH_1 ..... lattice energy.

ii) ΔH_2 ...... Hydration energy.

(b) Give an expression for heat of solution in terms of ΔH_1, ΔH_2 and ΔH_3. (1mk)

$$\Delta H_3 = \Delta H_1 + \Delta H_2 \qquad \Delta H_1 =$$

9. 6.84g of aluminium sulphate were dissolved in 300cm^3 of water. Calculate the molar concentration of sulphate ions in the solution. (R.M.F=342) (3mks)

$$Al_2(SO_4)_3 \rightarrow 2Al^{3+}_{(aq)} + 3SO_4^{2-}_{(aq)} \quad \checkmark \, ①$$
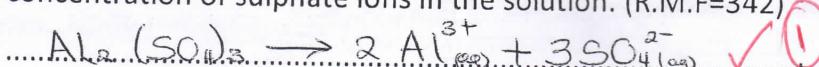
$\dfrac{6.84}{342} = 0.02$	$Al_2(SO_4)_3 : SO_4^{2-}$	$\dfrac{1000 \times 0.06}{300}$
	$1 \quad : \quad 3$	$\dfrac{1000 \times 0.06}{300}$
	$0.02 : 0.06$	$= 0.2 \, M \; \checkmark ②$

10. Study the information given in the table below and answer the questions that follow.

Bond	Bond energy (KJ mol)
C-H	413
Br-Br	193
C-Br	280
H-Br	365

(a) Calculate the Enthalpy changes for the reaction below (2mks)

CH$_4$ (g) + Br$_2$ (g) $\longrightarrow$ CH$_3$Br (g) + HBr (g)
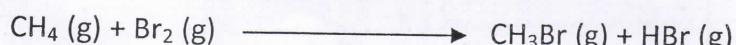
B.B	B. F
$(4 \times 413) + 193$	$(3 \times 413) + 280 + 365$
$= +1845$	$= -1884$