

2x (2) - (1) :



よ, Nernst の式より

$$\Delta E = \Delta E^\circ - \frac{RT}{nF} \ln \frac{[\text{Zn}^{2+}][\text{Ag}]^2}{[\text{Ag}^+]^2[\text{Zn}]}$$

$$\Delta E^\circ = E^\circ_{\text{Ag}} - E^\circ_{\text{Zn}} = 1.562(\text{V})$$

よ,

$$\Delta E = 1.562 - \frac{8.314 \cdot 298}{2 \cdot 96485} \cdot \ln \frac{[\text{Zn}^{2+}]}{[\text{Ag}^+]^2} \quad (\because [\text{Zn}] = [\text{Ag}] = 1)$$

$$= 1.562 - 0.01283 \ln \frac{10^{-3}}{10^{-2}}$$

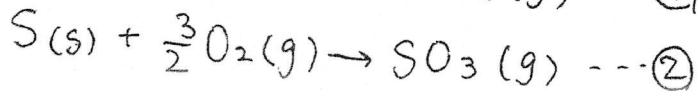
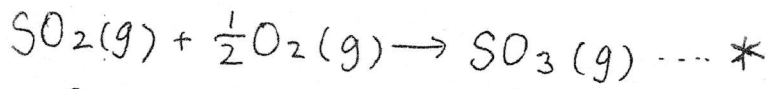
$$= 1.562 + 0.01283 \cdot 2.303$$

$$= 1.562 + 0.02966$$

$$= 1.591$$

$$\approx 1.59(\text{V})$$

5.



② - ①より*が誘導されるので

$$\begin{aligned}\Delta H &= H\textcircled{2} - H\textcircled{1} = -395.7 - (-296.8) \\ &= -98.9 \text{ (kJ)}\end{aligned}$$

$$H = U + PV$$

$$\Delta H = \Delta U + P\Delta V + V\Delta P$$

定圧変化であるのは明らかなので, $\Delta P = 0$.

$$\Delta H = \Delta U + P\Delta V$$

状態方程式 $P\Delta V = \Delta nRT$ (Δn : 反応の前後におけるモル数の変化より).

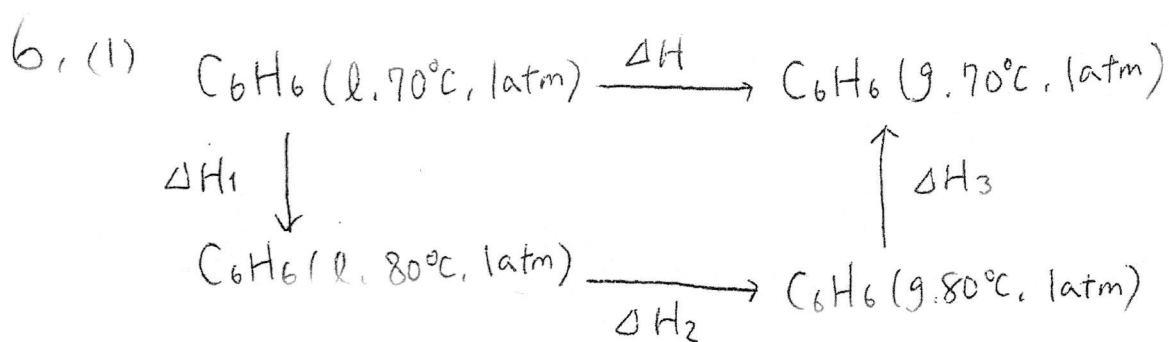
$$\Delta H = \Delta U + \Delta nRT$$

$$\therefore \Delta U = \Delta H - \Delta nRT$$

$$= -98.9 - \left(-\frac{1}{2}\right) \cdot 8.314 \cdot 298$$

$$= -97.671$$

$$\approx 97.7 \text{ (kJ)}$$

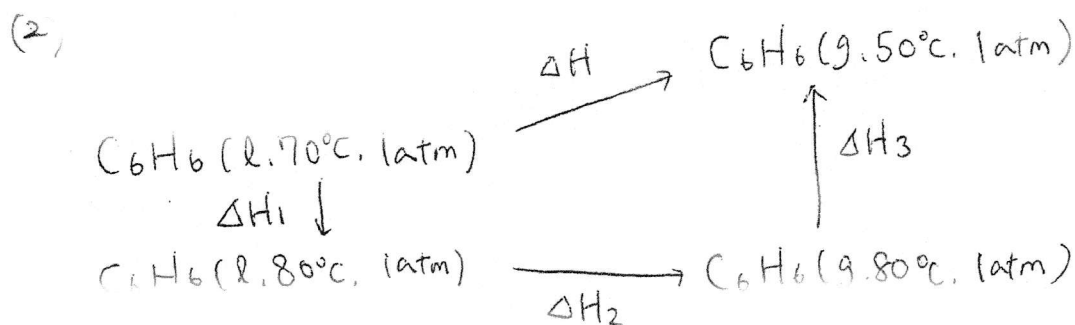


$$\Delta H_1 = C_{p,l}(353-343) = 362 \text{ (cal)} \quad \dots \textcircled{1}$$

$$\Delta H_2 = \text{蒸发热} = 7.35 \times 10^3 \text{ (cal)} \quad \dots \textcircled{2}$$

$$\Delta H_3 = C_{p,g}(342-353) = -203 \text{ (cal)}$$

$$\begin{aligned}
 \therefore \Delta H &= \Delta H_1 + \Delta H_2 + \Delta H_3 \\
 &= 362 + 7350 - 203 \\
 &= 7509 \text{ (cal)} \approx \underline{7.51 \text{ kcal}}
 \end{aligned}$$



$$\Delta H_1 = 36.2 \times 10 = 362 \text{ cal}$$

$$\Delta H_2 = 7350 \text{ cal}$$

$$\Delta H_3 = 20.3 \times (-30) = -609 \text{ cal}$$

$$\begin{aligned}
 \therefore \Delta H &= \Delta H_1 + \Delta H_2 + \Delta H_3 \\
 &= 362 + 7350 - 609 \\
 &= 7103 \approx \underline{7.1 \text{ kcal}}
 \end{aligned}$$