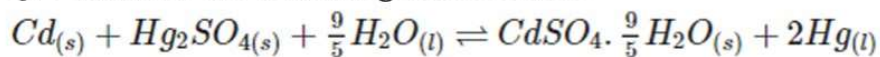


Q.2 Consider the following cell reaction :



The value of E_{cell}^0 is 4.315 V at 25°C. If $\Delta H^0 = -825.2 \text{ kJ mol}^{-1}$, the standard entropy change ΔS^0 in J K^{-1} is _____. (Nearest integer) [Given : Faraday constant = 96487 C mol^{-1}]

31st Aug Morning Shift 2021

Ans 2.

$$\Delta G^0 = -nFE^0 = \Delta H^0 - T\Delta S^0$$

$$\therefore \Delta S^0 = \frac{\Delta H^0 + nFE^0}{T}$$

$$= \frac{(-825.2 \times 10^3) + (2 \times 96487 \times 4.315)}{298}$$

$$= \frac{-825.2 \times 10^3 + 832.682 \times 10^3}{298}$$

$$= \frac{7.483 \times 10^3}{298} = 25.11 \text{ JK}^{-1} \text{ mol}^{-1}$$

\therefore Nearest integer answer is 25.