

2. For water at 100°C and 1 bar,  $\Delta_{\text{vap}} H - \Delta_{\text{vap}} U = \underline{\hspace{2cm}} \times 10^2 \text{ J mol}^{-1}$ . (Round off to the Nearest Integer)

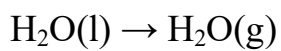
[Use:  $R = 8.31 \text{ J mol}^{-1} \text{ K}^{-1}$ ]

[Assume volume of  $\text{H}_2\text{O(l)}$  is much smaller than volume of  $\text{H}_2\text{O(g)}$ .

Assume  $\text{H}_2\text{O(g)}$  treated as an ideal gas] (JEE Mains, 2021)

**Ans:31**

Explanation:



$$\Delta_{\text{vap}} H - \Delta_{\text{vap}} U = \Delta n_g RT = 1 \times 8.31 \times 373 \approx 31 \times 10^2 \text{ J}$$