

Questions with Answer Keys

MathonGo

Q1: 16 March (Shift 1) - Numerical

For the reaction $A(g) \rightleftharpoons B(g)$ at 495 K,

$$\Delta_r G^\circ = -9.478 \text{ kJ mol}^{-1}$$

If we start the reaction in a closed container at

495 K with 22 millimoles of A, the amount of B in the equilibrium mixture is...millimoles. (Round off to the Nearest Integer). $[R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1}; \ln 10 = 2.303]$

Q2: 17 March (Shift 1) - Numerical

The standard enthalpies of formation of Al_2O_3 and CaO are $-1675 \text{ kJ mol}^{-1}$ and -635 kJ mol^{-1} respectively. For the reaction $3CaO + 2Al \rightarrow 3Ca + Al_2O_3$ the standard reaction enthalpy $\Delta_r H^\circ =$ ___ kJ.

(Round off to the Nearest Integer).

Q3: 17 March (Shift 2) - Numerical

Consider the reaction $N_2O_4(g) \rightleftharpoons 2NO_2(g)$.

The temperature at which $K_C = 20.4$ and $K_p = 600.1$, is ___ K. (Round off to the Nearest Integer).

[Assume all gases are ideal and $R = 0.0831 \text{ L bar K}^{-1} \text{ mol}^{-1}$]

Q4: 18 March (Shift 1) - Numerical

For the reaction



the reaction enthalpy $\Delta_r H =$ ___ kJ mol^{-1}

(Round off to the Nearest Integer).

[Given : Bond enthalpies in kJ mol^{-1} : C - C :

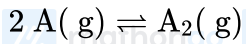
347, C = C : 611; C - H : 414, H - H : 436]

Q5: 18 March (Shift 2) - Numerical

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The gas phase reaction



at 400 K has $\Delta G^\circ = +25.2 \text{ kJ mol}^{-1}$.

The equilibrium constant K_C for this reaction is _____ $\times 10^{-2}$. (Round off to the Nearest integer) [Use

: $R = 8.3 \text{ J mol}^{-1} \text{ K}^{-1}$, $\ln 10 = 2.3$

$\log_{10} 2 = 0.30$, $1 \text{ atm} = 1 \text{ bar}$]

[$\text{antilog}(-0.3) = 0.501$]

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Answer Key

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Q1 (20)

Q2 (230)

Q3 (354)

Q4 (128)

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Q5 (166)

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