



MATHS

FOR IIT JEE ASPIRANTS OF CLASS 12 FOR MATHS

THERMODYNAMICS

Match The Column

1. Match Column - I with Column-II:

Column-I(Ideal Gas)

- (A) Reversible isothermal process
- (B) Reversible adiabatic process
- (C) Irreversible adiabatic process
- (D) Irreversible isothermal process

Column-II(Related equation)

- (P) $W = 2.303nRT \log(P_2 / P_1)$
- (Q) $W = nC_{V_m}(T_2 - T_1)$
- (R) $W = -2.303nRT \log(V_2 / V_1)$
- (S) $W = - \int_{V_i}^{V_f} P_{ext}. dV$



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2. Match the column-I with Column - II

Note that column- I may have more than one matching options in column-II.

Column-I

- (A) Reversible adiabatic compression
- (B) Reversible vapourisation
- (C) A diabatic free expansion of ideal gas in vacuum at constant temperature
- (D) Dissociation of $\text{CaCO}_3 \rightarrow \text{CaO}(s) + \text{CO}_2(g)$

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3. Match the column-

Column-I

Related to process

- (A) Fusion at melting point
- (B) Vapourisation at boiling point
- (C) Condensation at triple point
- (D) Melting at normal boiling point

Column-II

Related to system

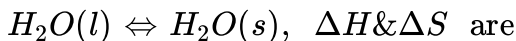
- (P) $\Delta G = 0$
- (Q) $\Delta G < 0$
- (R) $\Delta S > 0$
- (S) $\Delta H \cong \Delta U$

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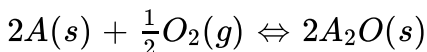
4. Match the column - 1

Column I

(A) For the process



(B) For the endothermic reaction

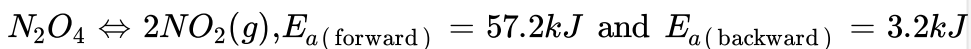


$\Delta S \& \Delta G$ are

(C) $C(\text{diamond}) \rightleftharpoons C(\text{graphite})$, favourable conditions for formation of

ΔS for form

(D) For the given reaction



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5. Match the column-1

Column I

(A) $\Delta S = nC_v \ln \frac{T_2}{T_1}$

(B) $\Delta S = - \frac{\Delta U_{\text{sys}}}{T}$

(C) $\Delta S = nC_v \ln \frac{T_2}{T_1} + nR \ln \frac{V_2}{V_1}$

Column II

(P) ΔS_{sys} for an irreversible isochoric

(Q) $|\Delta S|_{\text{surr}}$ for a reversible isochoric

(R) ΔS_{surr} for a reversible isochoric pr

(S) ΔS_{sys} for a reversible process



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6. Match the column- I

Column I

- (A) Adiabatic process
- (B) Isochoric process
- (C) Isothermal process
- (D) Isobaric process

Column II

- (P) Combustion in a rigid insulated container
- (Q) Polytropic index $= \infty$
- (R) Movement of heat from hot body to cold body
- (S) $C_{\text{Diamond}} \rightarrow C_{\text{Graphite}}$
- (T) Work is done by using internal energy



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7. Match the column- I

Column I

- (A) Adiabatic expansion of an ideal gas against 1 atm
- (B) Condensation of vapour at normal boiling point
- (C) Adiabatic reversible compression involving an ideal gas
- (D) Isothermal reversible expansion of an ideal gas

Column II

- (P) $\Delta S_{\text{sys}} > 0$
- (Q) $\Delta U = 0$
- (R) $\Delta S_{\text{univ}} > 0$
- (S) $w = 0$
- (T) $q = 0$



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