

Daily Tutorial Sheet-3	Level-1
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**31.(D)** 
$$\Delta S = 10.13 = 31.2 + 51.1 - 47.3 - S_{H_2O}$$
 
$$S_{H_2O} = 45.13 \text{ cal/k mole.}$$

**32.(A)** 
$$\Delta G = 29.3 \times 10^3 - (2 \times 239.7 - 152.3 - 223) \times 298 = -1721.8$$
 Joule

**33.(D)** 
$$\Delta U = 0$$
 [for isothermal process]  $\Delta H = 0$ 

$$\therefore \qquad \text{PV} = constant \ \Delta S = nR \, ln \frac{V_2}{V_1}$$

 $\Delta S > 0$  for isothermal expansion

**34.(B)** Endothermic reaction 
$$\Rightarrow \Delta H > 0$$
  
  $\Delta S > 0$  as gaseous moles are increasing

**37.(B)** 
$$\Delta S = \frac{\left(\Delta H\right)_{\text{vap}}}{T_{\text{B,pt}}} \implies T = \frac{30000}{75} = 400 \,\text{K}$$

**38.(ABD)** 
$$P_1V_1 = P_2V_2$$
 [for isothermal]

$$\Delta U = 0$$
 [for isothermal]

$$\Delta H = 0$$
 [for isothermal]

**39.(A)** 
$$\Delta U = q + W$$

**40.(D)** 
$$W = -P\Delta V = -nR\Delta T = -1 \times R \times 1 = -R$$

**41.(B)** For adiabatic reversible process;

$$PV^{\gamma} = K \qquad \Longrightarrow \qquad P_2 = P_1 \Bigg(\frac{V_1}{V_2}\Bigg)^{\gamma} \left(as \ V_2 > V_1\right)$$

 $\therefore$  So final pressure will be more for diatomic gas (less  $\gamma$ )

**42.(C)** 
$$TV^{\gamma-1} = K$$

**44.(A)** (A) At constant volume, 
$$w = 0$$

q < 0 (Cooling)

 $\Delta U < 0$  (Temperature is decreasing)

**(B)**  $\Delta U = 0$  (isothermal)

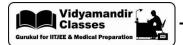
$$w < 0$$
 (expansion)

$$q > 0$$
 ( $\Delta U = q + w$ )

(C) 
$$q = 0$$
 (Adiabatic)

$$w = 0$$
 (Vacuum)

$$\Delta U = 0$$



 $\begin{array}{lll} \textbf{(D)} & w < 0 & & \text{(expansion)} \\ & q > 0 & & \text{(endothermic)} \end{array}$ 

 $\Delta H = \Delta U > 0$ 

**45.(C)** (A) q = 0 (B)  $\Delta T = 0$  (C)  $\Delta H = 0$  (D)  $\Delta S = 0$ 

VMC | Chemistry 44 Thermodynamics