Daily Tutorial Sheet-3	Level-1

31.(D) $\Delta S = 10.13 = 31.2 + 51.1 - 47.3 - S_{H_2O}$

$S_{H_2O} = 45.13$ 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]

$\Delta H = 0$

$\therefore$ $PV = \text{constant}$ $\Delta S = nR \ln \dfrac{V_2}{V_1}$

$\Delta S > 0$ for isothermal expansion

34.(B) Endothermic reaction $\Rightarrow$ $\Delta H > 0$

$\Delta S > 0$ as gaseous moles are increasing

35.(C) In I part, entropy is decreasing as solid is formed

In II and III, entropy is increasing as gaseous moles are increasing

36.(ACD) Only heat depends on path so it is a path function

All other options depends only on state so these are state function

37.(B) $\Delta S = \dfrac{(\Delta H)_{vap}}{T_{B.pt}}$ $\Rightarrow$ $T = \dfrac{30000}{75} = 400\,K$

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;

$PV^{\gamma} = K$ $\Rightarrow$ $P_2 = P_1\left(\dfrac{V_1}{V_2}\right)^{\gamma}$ $(\text{as } V_2 > V_1)$

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

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

43.(D) Bond formation is exothermic.

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)

$\Delta U = 0$

(D) $w < 0$ (expansion)
$q > 0$ (endothermic)
$\Delta H = \Delta U > 0$

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