Date Planned : __ / __ / __	Daily Tutorial Sheet-6	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-2	Exact Duration :_____

***76.** Which of the following regarding the said processes is (are) correct ?

(A) Expansion of an ideal gas against vaccum is always reversible

(B) A spontaneous process is always irreversible

(C) In a reversible thermodynamic process, system always remains in equilibrium with surroundings

(D) If a system containing ideal gas in a piston undergoes isothermal expansion from a given initial state to the same final volume, the surroundings loses more heat if expansion is carried out irreversibly rather reversibly

77. Match the following :

Column I		Column II	
(A)	Isothermal processes	**(1)**	$\Delta U = 0$
(B)	Reversible adiabatic process	**(2)**	$\Delta H = 0$
(C)	Cyclic process	**(3)**	$\Delta S = 0$
(D)	Isochoric process	**(4)**	$w = 0$

78. A gas expands isothermally against a constant external pressure of 1 atm from a volume of $10\,dm^3$ to a volume of $20\,dm^3$. It absorbs 800 J of thermal energy from its surroundings. The ΔU is :

(A) – 312 J **(B)** + 123 J **(C)** –213 J **(D)** + 231 J

79. In which of the following reactions, the enthalpy is the least?

(A) $CH_3COOH + NaOH \longrightarrow CH_3COONa + H_2O$

(B) $HCl + NH_4OH \longrightarrow NH_4Cl + H_2O$

(C) $HCl + NaOH \longrightarrow NaCl + H_2O$

(D) $HCN + NH_4OH \longrightarrow NH_4CN + H_2O$

80. Molar entropy change is $16\,J\ mol^{-1}\ K^{-1}$, the boiling points of the liquid is if molar heat of vaporization is 6 kJ/mol :

(A) 375°C **(B)** 375 K **(C)** 273 K **(D)** 102°C

81. For the reaction of one mole zinc dust with one mole sulphuric acid in a bomb calorimeter, ΔU and w correspond to :

(A) $\Delta U < 0, w = 0$ **(B)** $\Delta U < 0, w < 0$ **(C)** $\Delta U > 0, w > 0$ **(D)** $\Delta U > 0, w > 0$

82. Assuming that, water vapour is an ideal gas, the internal energy change (ΔU) when 1 mol of water is vaporized at 1 bar pressure and 100°C, (given : molar enthalpy of vaporized of water at 1 bar and $373\,K = 41\,kJ\ mol^{-1}$ and $R = 8.314\,J\ K^{-1}\,mol^{-1}$) will be :

(A) $41.00\,kJ\ mol^{-1}$ **(B)** $4.100\,kJ\ mol^{-1}$

(C) $3.7904\,kJ\ mol^{-1}$ **(D)** $37.904\,kJ\ mol^{-1}$

83. A sample of oxygen gas expands its volume from 3 litre to 5 litre against a constant pressure of 3 atm. If the work done during expansion is used to heat 10 mole of water initially present at 290 K, its final temperature will be : (Specific heat capacity of water $= 4.184 JK^{-1}g^{-1}$)

(A) 292.0 K **(B)** 290.8 K **(C)** 298.0 K **(D)** 293.7 K

***84.** P and Q are arbitrarily chosen intensive variables then :

(A) (P + Q) is extensive property **(B)** P/Q is an intensive variable

(C) PQ is an intensive variable **(D)** $\frac{dP}{dQ}$ is an intensive property

***85.** $\Delta E = 0$ for which process

(A) Cyclic process **(B)** Isothermal expansion

(C) Isochoric process **(D)** Adiabatic process