Daily Tutorial Sheet-8	Level-2

96.(A) $S + O_2 \longrightarrow SO_2$

Eq (4) – Eq (2) – Eq (3) – Eq (1), we get the desired reaction.

So $\Delta H = \Delta H_4 - \Delta H_2 - \Delta H_3 - \Delta H_1 = -814.4 + 130.2 + 287.3 + 98.7 = -298.2\,kJ$

97.(B) For diatomic molecule, bond dissociation enthalpy is equal to heat of atomization.

98.(B) More is the heat of neutralisation, stronger is acid.

Negative sign shows only release of energy.

99.(A) Cane sugar $\longrightarrow C_{12}H_{22}O_{11}$

Molar mass of cane sugar $= 342\,g/mol$

$$C_{12}H_{22}O_{11} + \frac{35}{2}O_2 \longrightarrow 12\,CO_2 + 11\,H_2O$$

1349 Kcal energy acquire by $\longrightarrow 342\,g$ of cane sugar

2870 Kcal energy acquire by $\longrightarrow \frac{342}{1349} \times 2870 = 727.6\,g$

100.(C) $Fe + S \longrightarrow FeS$

2.1g of Fe evolve $= 3.77\,kJ$

56 g of Fe evolve $= \frac{3.77}{2.1} \times 56 = -100.5\,kJ/mol$

Negative sign shows release of energy.

101.(C) Maximum amount of acid and base being neutralized will release maximum amount of energy.

102.(AC) $U + \frac{1}{2}F_2 \longrightarrow UF \qquad \Delta H_f = 22\,Kcal/mol$

$$\Delta H_f(UF) = \Delta H_f(U) + \frac{1}{2}B.D.(F-F) - B.D(U-F)$$

$$22 = 128 + \frac{1}{2}(37.0) + B.D(U\text{-}F)$$

$$B.D\ (U\text{-}F) = 128 + \frac{1}{2}(37.0) - 22 = 124.5\,Kcal/mol$$

$$\Rightarrow \qquad 2\,cal \longrightarrow 8.314\,J$$

$$124.5\,cal \longrightarrow \frac{8.314}{2} \times 124.5 = 517.54\,kJ/mol$$

103.(B) If oxalic acid have been a strong acid, its heat of neutralization with a strong base would have been – 13.7 kcals $equiv^{-1}$, i.e. – 27.4 kcals mol^{-1}.

Heat of dissociation per mole of oxalic acid = Actual heat of neutralization per mole – Expected heat of neutralization per mole assuming it to be strong.

= – 26 – (–27.4) = 1.4 kcals

Hence, (B) is the correct answer.

104.(BD) Look for definition of heat of reaction and heat of formation.

105.(C) Total heat absorbed = $\Delta H_{fusion} + \Delta H_{temp.\ rise} + \Delta H_{vap} = 10 \times 80 + 10 \times 1 \times 100 + 10 \times 540 = 7200$ cal