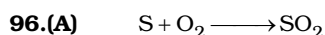


**Daily Tutorial Sheet-8**

**Level-2**



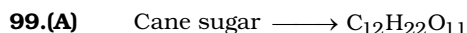
Eq (4) – Eq (2) – Eq (3) – Eq (1), we get the desired reaction.

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

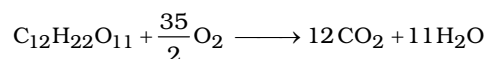
**97.(B)** For diatomic molecule, bond dissociation enthalpy is equal to heat of atomization.

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

Negative sign shows only release of energy.

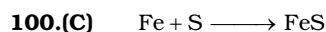


Molar mass of cane sugar = 342 g / mol



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

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



2.1g of Fe evolve = 3.77 kJ

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

Negative sign shows release of energy.

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



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

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

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

$$\Rightarrow 2 \text{ cal} \longrightarrow 8.314 \text{ J}$$

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

**103.(B)** If oxalic acid have been a strong acid, its heat of neutralization with a strong base would have been – 13.7 kcal equiv<sup>-1</sup>, i.e. – 27.4 kcal mol<sup>-1</sup>.

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.

$$= -26 - (-27.4) = 1.4 \text{ kcal}$$

Hence, (B) is the correct answer.

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

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