Delhi Private School Dubai

Grade 11

Subject: Chemistry

Q1. Calculate the standard enthalpy of formation of $CH_3OH(l)$ from the following data:
$CH_3OH\ (l) + 3/2\ O_2\ (g) \rightarrow CO_2\ (g) + 2H_2O\ (l)$; $\Delta cH^{\theta} = -726\ kJ\ mol^{-1}$
$C\ (g) + O_2\ (g) \rightarrow CO_2\ (g)$; $\Delta f\ H^{\theta} = -393\ kJ\ mol^{-1}$
$H_2(g) + 1/2\ O_2\ (g) \rightarrow H_2O\ (l)$; $\Delta f\ H^{\theta} - 286\ kJ\ mol^{-1}$

Q2. Why is Wurtz reaction not preferred for the preparation of alkanes containing odd number of carbon atoms? Illustrate your answer by taking one example.

Q3. A mixture of 1.57 mol of N_2, 1.92 mol of H_2 and 8.13 mol of $NH_3$is introduced into a 20 L reaction vessel at 500 K. At this temperature, the equilibrium constant K_c for the reaction.

Q4. Calculate the energy and wavelength of the radiation emitted when an electron jumps from n= 3 to n= 2 in a hydrogen atom.

Q5. Draw the molecular orbital diagram of N_2 and calculate the bond order.