Q2. Following data is given for the reaction:
$CaC0_3(s) \rightarrow CaO(s) + C0_2(g)$
$\Delta_f H°$ [CaO(s)] = -635.1 kJ mol^{-1}
$\Delta_f H°$ [CO_z(g)] = -393.5 kJ mol^{-1}
$\Delta_f H°$ [$CaC0_3$(s)] = -1206.9 kJ mol^{-1}
Predict the effect of temperature on the equilibrium constant of the above reaction.
Sol: $\Delta_r H°$ = $\Delta_f H°$ [CaO] + $\Delta_f H°$ [$C0_2$] – $\Delta_f H°$ [$CaC0_3$]
= [-635.1] + [-393.5] – [-1206.9] = 178.3 kJ mol^{-1} Thus, the reaction is endothermic. Hence, according to Le Chatelier's principle, on increasing the temperature, the equilibrium will proceed in the forward direction.