Calculate the ΔG° at 298K for the following reaction:

$$4PCl_{5}(g) \ + \ 10O_{2}(g) \ {\color{red} \rightarrow} \ P_{4}O_{10}(s) + \ 10Cl_{2}O(g)$$

$$Ans = -497 \text{ kJ mol}^{-1}$$

Calculate the $\Delta \mathbf{G}^{\circ}$ at 298K for the following reaction:

$$CH_3CH_2OH(g) + 8Cl_2(g) \rightarrow 2CCl_4(g) + 6HCl(g) + Cl_2O(g)$$

$$Ans = -426.3 \text{ kJ mol}^{-1}$$

Calculate the $\Delta \mathbf{G}^{0}$ at 298 K for the following reaction:

$$CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$$

$$Ans = -800.8 \text{ kJ mol}^{-1}$$

Calculate the $\Delta \mathbf{G}^{\circ}$ at 298K for the following reaction:

$$2CH_3OH(g) + 3O_2(g) \rightarrow 2CO_2(g) + 4H_2O(g)$$

$$Ans = -1379.18 \text{ kJ mol}^{-1}$$

Calculate the $\Delta \mathbf{G}^{0}$ at 298K for the following reaction:

$$2C \text{ (graphite)} + 2Cl_2O(g) \rightarrow CCl_4(g) + CO_2(g)$$

$$Ans = -650.94 \text{ kJ mol}^{-1}$$

Calculate the ΔG° at 298K for the following reaction:

$$N_2(g) + 6HCl(g) \rightarrow 2NH_3(g) + 3Cl_2(g)$$

Ans =
$$+538.7 \text{ kJ mol}^{-1}$$

Calculate the ΔG° at 298K for the following reaction:

$$4PF_3(g) + 8O_2(g) \rightarrow P_4O_{10}(s) + 6F_2O(g)$$

$$Ans = +864.27 \text{ kJ mol}^{-1}$$

Calculate the ΔG° at 298K for the following reaction:

$$CH_3CH_2OH (g) + 8F_2 (g) \rightarrow 2CF_4 (g) + 6HF (g) + F_2O (g)$$

 $Ans = -3235.3 \text{ kJ mol}^{-1}$

Calculate the $\Delta \mathbf{G}^{o}$ at 298K for the following reaction:

$$C_2H_4(g) + 3O_2(g) \rightarrow 2CO_2(g) + 2H_2O(g)$$

Ans = -1313.97 kJ mol⁻¹

Calculate the $\Delta \mathbf{G}^{0}$ at 298K for the following reaction:

$$CH_3CH_2OH (g) + 3O_2 (g) \rightarrow 2CO_2 (g) + 3H_2O (g)$$

 $Ans = -1305.8 \text{ kJ mol}^{-1}$

Calculate the $\Delta \mathbf{G}^{\circ}$ at 298K for the following reaction:

2C (graphite) +
$$2F_2O(g) \rightarrow CF_4(g) + CO_2(g)$$

Ans = $-1265.4 \text{ kJ mol}^{-1}$

Calculate the ΔG° at 298K for the following reaction:

$$N_2(g) + 6HF(g) \rightarrow 2NH_3(g) + 3F_2(g)$$

Ans = +1606.14 kJ mol⁻¹

Calculate the ΔG° at 298K for the following reaction:

$$SiO_2(s) + 4HF(g) \rightarrow SiF_4(g) + 2H_2O(g)$$

 $Ans = -80.30 \text{ kJ mol}^{-1}$

Calculate the ΔG° at 298K for the following reaction:

$$Zn(s) + SO_2(g) \rightarrow ZnS(s) + 2ZnO(s)$$

 $Ans = -562.7 \text{ kJ mol}^{-1}$

Calculate the ΔG° at 298K for the following reaction:

$$2\text{TiO}_{2}(s) + 3\text{Cl}_{2}(g) \rightarrow 2\text{TiCl}_{3}(s) + 2\text{O}_{2}(g)$$

Ans = +471.5 kJ mol⁻¹