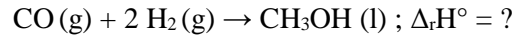
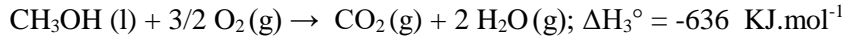
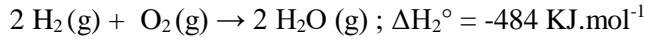
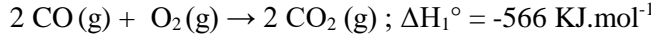


Exercise №1

Determine the enthalpy of $\Delta_r H^\circ$ the following methanol synthesis reaction:

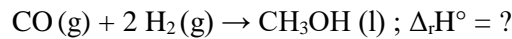


By using the following data:

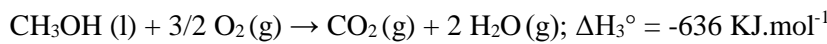
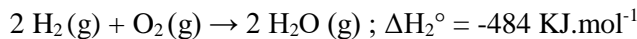
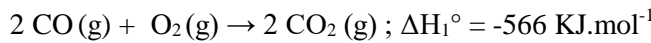


التمرين الأول:

أحسب $\Delta_r H^\circ$ أنتالبي تفاعل تركيب الميثانول التالي:

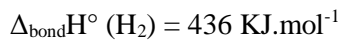
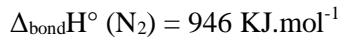
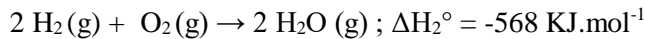
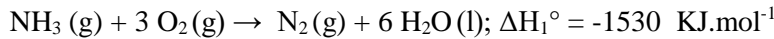


باستعمال المعطيات التالية:



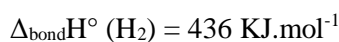
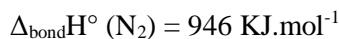
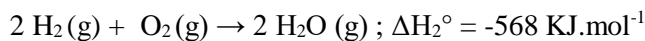
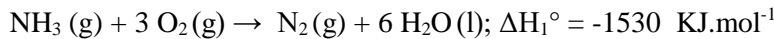
Exercise №2

Determine the energy of the N-H bond in ammonia NH_3 , from the following data:



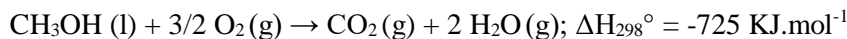
التمرين الثاني:

أحسب طاقة الربط $N-H$ الموجودة في غاز الأمونياك NH_3 بالاعتماد على المعطيات التالية:



Exercise №3

Methanol burns according to the balance equation:

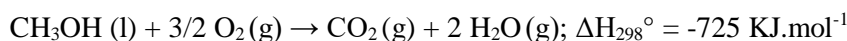


What is the standard enthalpy of this reaction at 350K?

We give : $\Delta_{\text{vap}} H^\circ (\text{CH}_3\text{OH (l)}) = 35 \text{ KJ.mol}^{-1}$ at 338K; $C_p (\text{CH}_3\text{OH (l)}) = 81.6 \text{ J.mol}^{-1} \cdot \text{K}^{-1}$; $C_p (\text{CH}_3\text{OH (g)}) = 43.9 \text{ J.mol}^{-1} \cdot \text{K}^{-1}$; $C_p (\text{CO}_2 \text{(g)}) = 37.1 \text{ J.mol}^{-1} \cdot \text{K}^{-1}$; $C_p (\text{H}_2\text{O (l)}) = 75.2 \text{ J.mol}^{-1} \cdot \text{K}^{-1}$; $C_p (\text{O}_2 \text{(g)}) = 29.4 \text{ J.mol}^{-1} \cdot \text{K}^{-1}$.

التمرين الثالث:

يحترق الميثانول حسب معادلة الاحتراق التالية:



جد الانتالبي القياسي للمعادلة عند 350 K.

يعطى:

$\Delta_{\text{vap}} H^\circ (\text{CH}_3\text{OH (l)}) = 35 \text{ KJ.mol}^{-1}$ at 338K; $C_p (\text{CH}_3\text{OH (l)}) = 81.6 \text{ J.mol}^{-1} \cdot \text{K}^{-1}$; $C_p (\text{CH}_3\text{OH (g)}) = 43.9 \text{ J.mol}^{-1} \cdot \text{K}^{-1}$;

$C_p (\text{CO}_2 \text{(g)}) = 37.1 \text{ J.mol}^{-1} \cdot \text{K}^{-1}$; $C_p (\text{H}_2\text{O (l)}) = 75.2 \text{ J.mol}^{-1} \cdot \text{K}^{-1}$; $C_p (\text{O}_2 \text{(g)}) = 29.4 \text{ J.mol}^{-1} \cdot \text{K}^{-1}$.