LATIHAN 6

Jawablah pertanyaan berikut dengan benar di lembar kerja yang disediakan!



1. Diketahui reaksi:

$C_6H_{12}O_{6(aq)} + 6O_{2(g)} \rightarrow 6CO_{2(g)} + 6H_2O_{(g)}$ $\Delta H = -394$ kJ

$C_2H_5OH_{(aq)} + 3O_{2(g)} \rightarrow 2CO_{2(g)} + 3H_2O_{(l)}$ $\Delta H = +569$ kJ

Hitunglah nilai perubahan entalpi dari reaksi:

$C_6H_{12}O_{6(aq)} \rightarrow 2C_2H_5OH_{(aq)} + 2CO_{2(g)}$!



Reaksi 1 _____ + $6O_{2(g)}$ → _____ + _____ $\Delta H =$_____

Reaksi 2 _____ + _____ → _____ + $3O_{2(g)}$ $\Delta H =$_____

Perubahan entalpi reaksi:

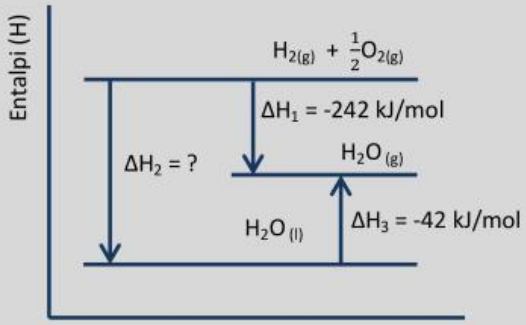
Reaksi 1 _____ + _____ → _____ + _____ $\Delta H =$_____

Reaksi 2 _____ + _____ → _____ + _____ $\Delta H =$_____

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_____ + _____ → _____ + _____ $\Delta H =$_____

2. Perhatikan diagram energi berikut!



Tentukanlah nilai ΔH_2!

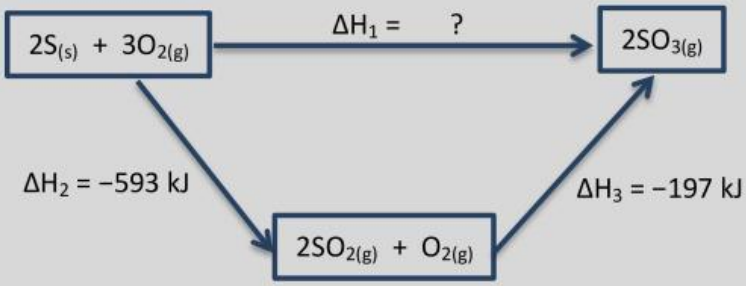
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$\Delta H_1 = \Delta H_2 + \Delta H_3$

$\Delta H_2 = \Delta H_1 - \Delta H_3$

ΔH_2 = _____

3. Diketahui diagram siklus energi berikut:



Hitunglah nilai ΔH_1!

$\Delta H_1 = \Delta H_2 + \Delta H_3$

ΔH_1 = _____

ΔH_1 = _____



4. Diketahui:

$\Delta H^\circ_f\ C_2H_5OH$ = −266 kJ/mol

$\Delta H^\circ_f\ CO_2$ = −394 kJ/mol

$\Delta H^\circ_f\ H_2O$ = −286 kJ/mol

Tentukanlah besarnya perubahan entalpi reaksi pada pembakaran sempurna etanol menurut reaksi: $C_2H_5OH + 3O_2 \rightarrow 2CO_2 + 3H_2O$!

ΔH reaksi = ($\sum \Delta H^\circ_f$ produk) − ($\sum \Delta H^\circ_f$ reaktan)

ΔH reaksi = (__$\Delta H^\circ_f\ CO_2$ + __$\Delta H^\circ_f\ H_2O$) − (__$\Delta H^\circ_f\ C_2H_5OH$ + __$\Delta H^\circ_f\ O_2$)

ΔH reaksi = (_____ + _____) − (_____ + _____)

ΔH reaksi = _____ − _____

ΔH reaksi = _____



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5. Diketahui:

$\Delta H^\circ_f\ C_3H_{8(g)}$ = -104 kJ/mol

$\Delta H^\circ_f\ CO_{2(g)}$ = -394 kJ/mol

$\Delta H^\circ_f\ H_2O_{(l)}$ = -286 kJ/mol

Tentukanlah perubahan entalpi reaksi $C_3H_{8(g)} + 5O_{2(g)} \rightarrow 3CO_{2(g)} + 4H_2O_{(l)}$!

ΔH reaksi = ($\sum \Delta H^\circ_f$ produk) − ($\sum \Delta H^\circ_f$ reaktan)

ΔH reaksi = (___$\Delta H^\circ_f\ CO_2$ + ___$\Delta H^\circ_f\ H_2O$) − (___$\Delta H^\circ_f\ C_3H_8$ + ___$\Delta H^\circ_f\ O_2$)

ΔH reaksi = (_____ + _____) − (_____ + _____)

ΔH reaksi = _____ − _____

ΔH reaksi = _____



6. Diketahui energi ikatan:

C – H = 415 kJ/mol C – C = 348 kJ/mol

C = C = 607 kJ/mol H – H = 436 kJ/mol

Tentukanlah nilai perubahan entalpi reaksi $C_2H_{4(g)} + H_{2(g)} \rightarrow C_2H_{6(g)}$!

ΔH reaksi = ($\sum E_{\text{pemutusan ikatan}}$) − ($\sum E_{\text{pembentukan ikatan}}$)

ΔH reaksi = (__C – H + __C = C + __H – H) − (__C – H + __ C – C)

ΔH reaksi = _____ − _____

ΔH reaksi = _____



7. Diketahui energi ikatan:

Cl – Cl : 243 kJ/mol C – H : 415 kJ/mol

C – Cl : 338 kJ/mol H – Cl : 432 kJ/mol

Hitunglah perubahan entalpi reaksi $CH_4 + 4Cl_2 \rightarrow CCl_4 + 4HCl$!

ΔH reaksi = ($\sum E_{\text{pemutusan ikatan}}$) − ($\sum E_{\text{pembentukan ikatan}}$)

ΔH reaksi = (__C – H + __Cl – Cl) − (__C – Cl + __ H – Cl)

ΔH reaksi = _____ − _____

ΔH reaksi = _____



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