

## ΑΣΚΗΣΗ 9.65

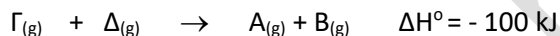
- α) iv  
 β) iii  
 γ) iii  
 δ) iv  
 ε) iv  
 στ) i

## ΑΣΚΗΣΗ 9.66

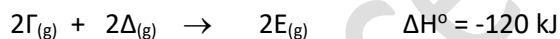
- α) ii  
 β) i  
 γ) i  
 δ) iv  
 ε) iv  
 στ) ii

## ΑΣΚΗΣΗ 9.67

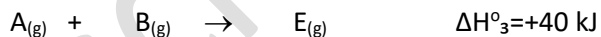
A. Σύμφωνα με την αρχή Lavoisier – Laplace:



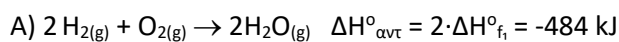
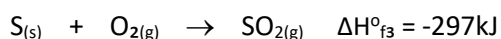
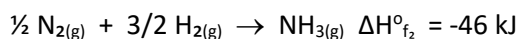
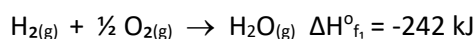
B. Πολλαπλασιάζουμε επί 2 τη 2<sup>η</sup> αντίδραση:



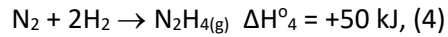
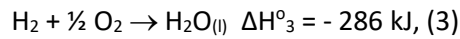
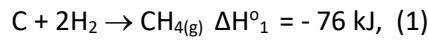
Γ. Hess:



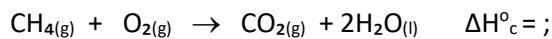
## ΑΣΚΗΣΗ 9.68



## ΑΣΚΗΣΗ 9.69

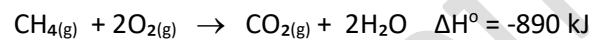
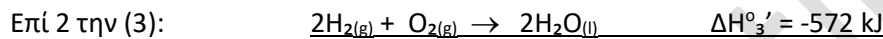
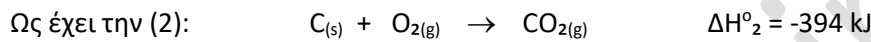


Για την πρότυπη ενθαλπία καύσης του  $\text{CH}_4$ :



1<sup>ος</sup> τρόπος:

Hess:

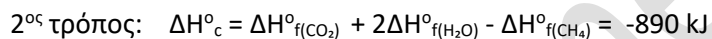


$$1 \text{ mol} = 16 \text{ g}$$

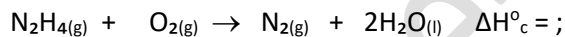
$$890 \text{ kJ}$$

$$1 \text{ g}$$

$$Q_1 = 890/16 \text{ kJ}$$

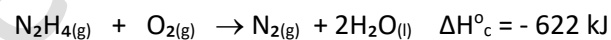
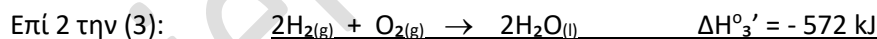
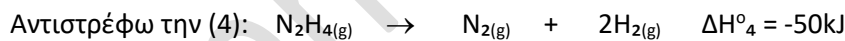


Για την πρότυπη ενθαλπία καύσης του  $\text{N}_2\text{H}_4$ :



1<sup>ος</sup> τρόπος:

Hess:



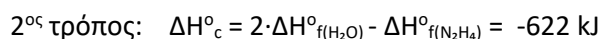
$$1 \text{ mol} = 32 \text{ g}$$

$$622 \text{ kJ}$$

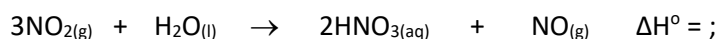
$$1 \text{ g}$$

$$Q_2 = 622/32 = 311/16 \text{ kJ}$$

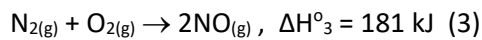
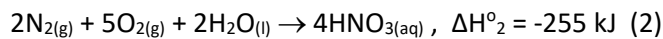
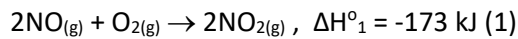
Οπότε μεγαλύτερη ενέργεια ανα 1g αποδίδει η καύση του  $\text{CH}_4$



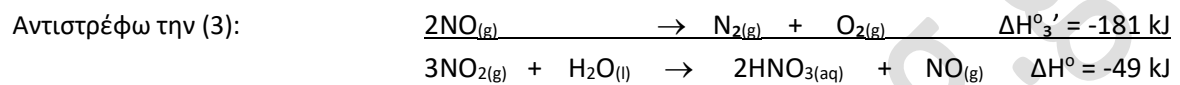
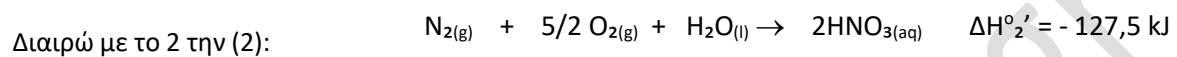
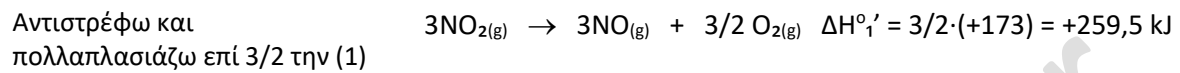
## ΑΣΚΗΣΗ 9.70



Δίνονται οι θερμοχημικές εξισώσεις:

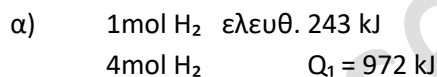
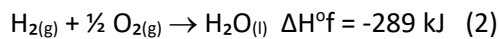
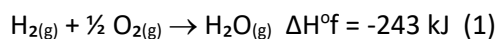


Hess:



### ΑΣΚΗΣΗ 9.71

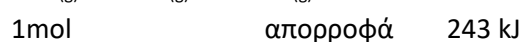
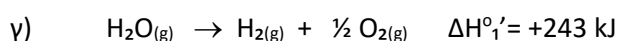
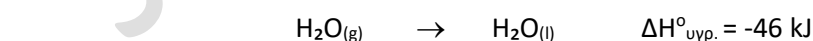
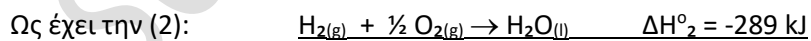
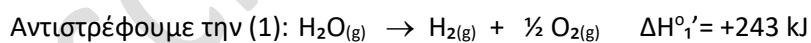
Πρότυπη ενθαλπία σχηματισμού υδρατμών:



β) Υγροποίηση είναι το παρακάτω φυσικό φαινόμενο:

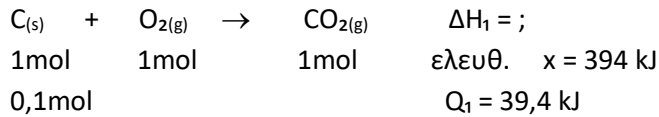


Για να βρούμε την πρότυπη ενθαλπία υγροποίησης θα εφαρμόσουμε τον Hess:

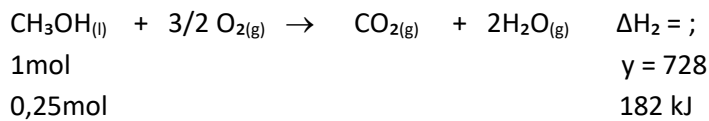


## ΑΣΚΗΣΗ 9.72

$$n_C = 1,2 / 12 = 0,1 \text{ mol} \text{ και } n_{\text{CH}_3\text{OH}} = 8/32 = 0,25 \text{ mol}$$

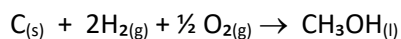


$$\Delta\eta\lambda. \Delta H_1 = -394 \text{ kJ/mol}$$

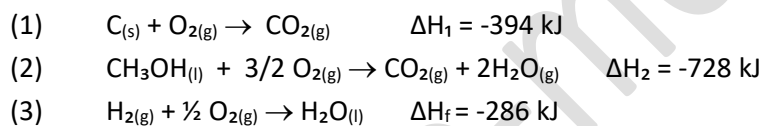


$$\Delta\eta\lambda. \Delta H_2 = -728 \text{ kJ/mol}$$

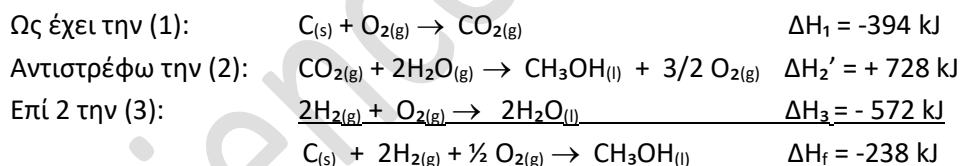
Θα υπολογίσουμε την ενθαλπία σχηματισμού της  $\text{CH}_3\text{OH}$ :



Δίνονται οι αντιδράσεις:



Hess:



## ΑΣΚΗΣΗ 9.73

Έστω  $x \text{ mol CH}_4$  και  $x \text{ mol C}_2\text{H}_4$ ,

$$\alpha) n_{\text{μείγματος}} = 4,48/22,4 = 0,2 \text{ mol} \Rightarrow x + x = 0,2 \Rightarrow x = 0,1 \text{ mol}$$

$$m_{\text{CH}_4} = 0,1 \cdot 16 = 1,6 \text{ g}$$

$$m_{\text{C}_2\text{H}_4} = 0,1 \cdot 28 = 2,8 \text{ g}$$

$$m_{\text{ολ}} = 4,4 \text{ g}$$

β)

