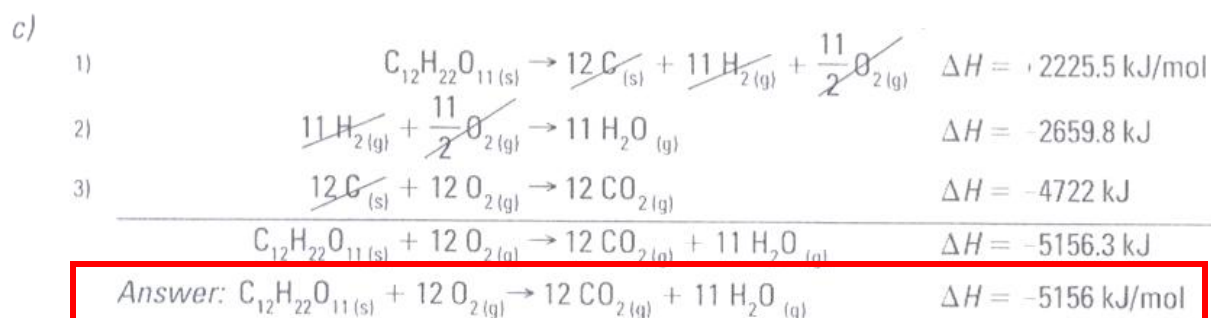
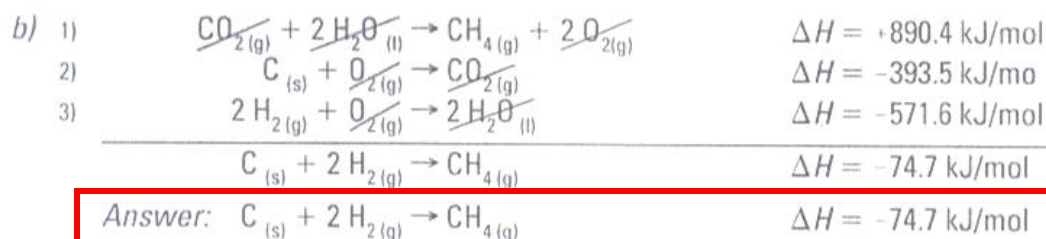
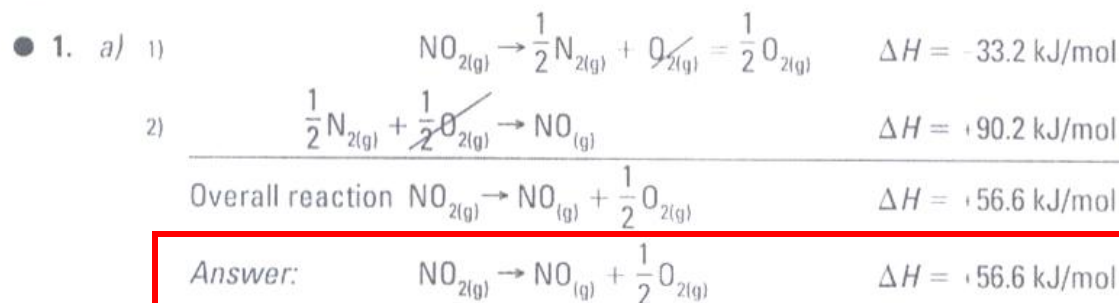
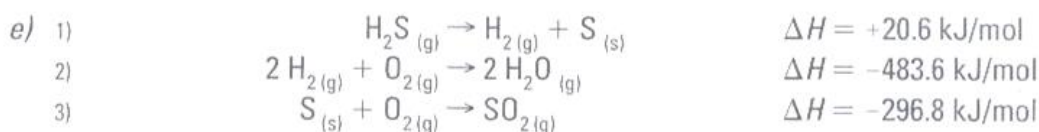
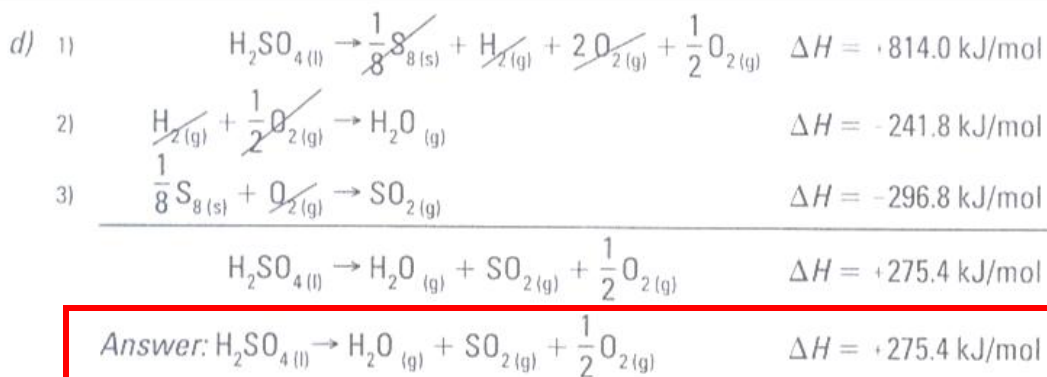


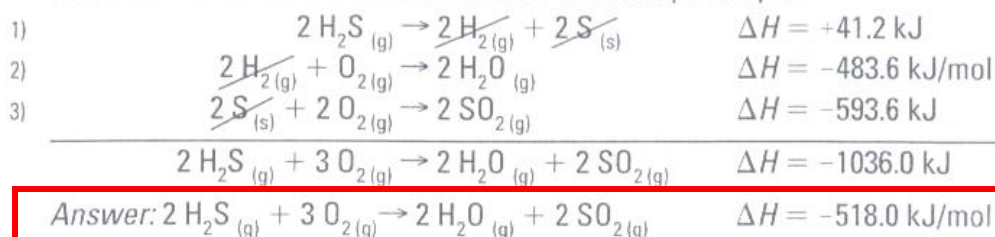
Chapter 7 Hess's Law

 Textbook, p. 197 to 209



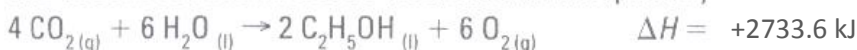


The first reaction and the third reaction are multiplied by 2.

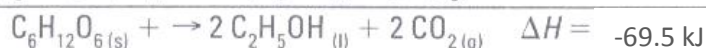
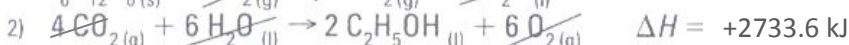
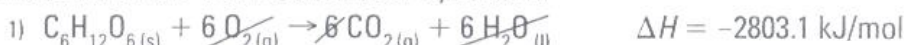


● 2. 1. Manipulation of equations to obtain an overall equation:

The second reaction must be inverted and multiplied by 2.



2. Addition of the thermochemical equations:

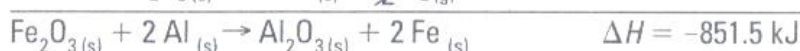
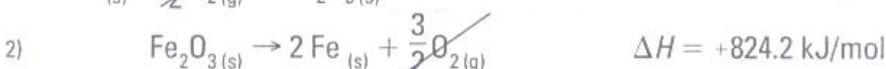


3. Conversion of the enthalpy value of the overall reaction into molar heat:

The molar heat -69.5 kJ for two moles of ethanol, that is, -34.75 kJ/mol

Answer: The molar heat of the formation of ethanol ($\text{C}_2\text{H}_5\text{OH}$) is -34.75 kJ/mol

● 3. 1. Addition of the thermochemical equations:



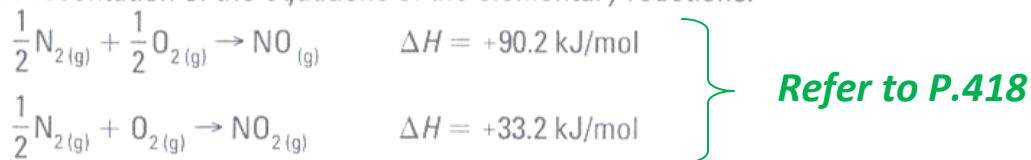
2. Conversion of the enthalpy value of the overall reaction into molar heat:

The molar heat is -851.5 kJ for one mole of Fe_2O_3 , that is, -851.5 kJ/mol .

Answer: The molar heat of the reaction is -851.5 kJ/mol .

- 5. a) 4 e) 120 kJ/mol h) Endothermic
 b) 3 f) +30 kJ/mol i) -10 kJ/mol
 c) 4 g) -40 kJ/mol j) Exothermic
 d) 70 kJ/mol

■ 6. a) 1. Presentation of the equations of the elementary reactions:

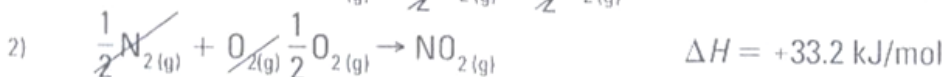
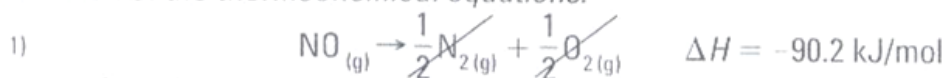


2. Manipulation of the equations to obtain the overall equation:

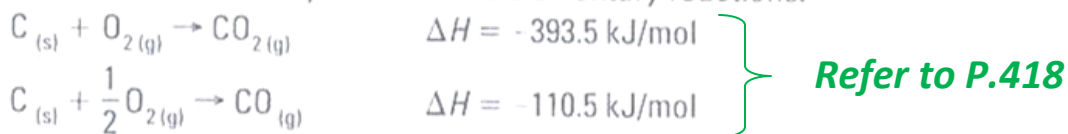
Reverse the first equation so that the $\text{NO}_{(g)}$ is on the reactant's side.



3. Addition of the thermochemical equations:



b) 1. Presentation of the equations of the elementary reactions:

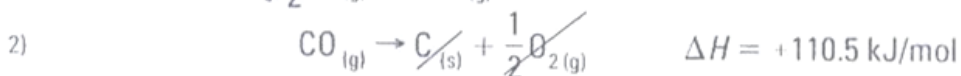
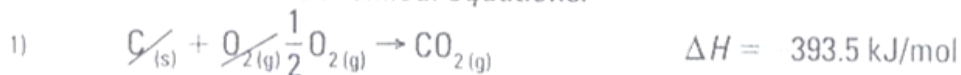


2. Manipulation of the equations to obtain an overall equation:

Reverse the second reaction so that the $\text{CO}_{(g)}$ is on the reactants' side.

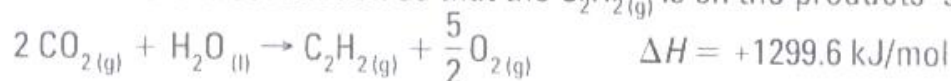


3. Addition of the thermochemical equations:



■ 7. 1. Manipulation of the equations to obtain the overall equation:

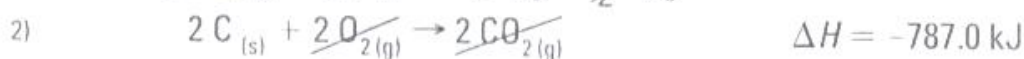
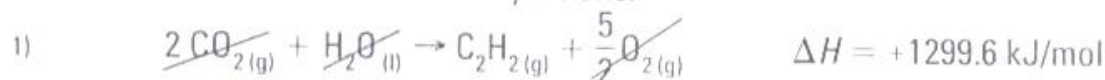
Reverse the first reaction so that the $C_2H_2(g)$ is on the products' side.



Multiply the second reaction by 2.



2. Addition of the thermochemical equations:



■ 8. Graph b).

■ 9. 1. Choice of the correct equations:

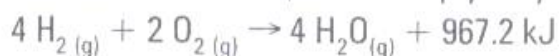
Reactions 2), 3) and 4) must be chosen to answer the question.

2. Manipulation of the equations to obtain the overall equation:

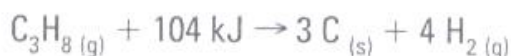
Multiply reaction 2) by 3.



Reverse reaction 3) and multiply it by 4.



Reverse reaction 4).



3. Addition of the thermochemical equations:

Add these three reactions algebraically to obtain the following overall reaction:

