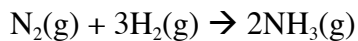


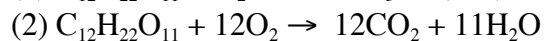
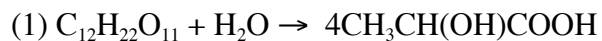
# LECTURE 15

1. Using the following bond enthalpy table, calculate the estimated enthalpy of reaction for the following reaction:



N-N	163 kJ/mol	N-H	391 kJ/mol
N=N	418 kJ/mol	H-H	436 kJ/mol
N≡N	941 kJ/mol		

2. The anaerobic conversion of sucrose ( $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ ) to lactic acid ( $\text{CH}_3\text{CH}(\text{OH})\text{COOH}$ ) is shown in equation (1). The combustion of sucrose is shown in equation (2).



Calculate the standard reaction enthalpy for each reaction using the following enthalpy of formation data:  $\Delta H_f^\circ = -694$  kJ/mol for lactic acid,  $\Delta H_f^\circ = -2222$  kJ/mol for sucrose,  $\Delta H_f^\circ = -393.5$  kJ/mol for  $\text{CO}_2$ ,  $\Delta H_f^\circ = -286$  kJ/mol for  $\text{H}_2\text{O}$ .

## Additional Book Problems:

Atkins and Jones, Chemical Principles, fourth edition:

Chapter 6, Self-Test 6.18A&B, problem 6.62 & 6.63, 6.86 & 6.87

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