

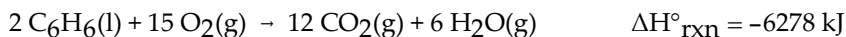
Name _____, show your work.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) Which statement is FALSE? 1) _____
- A) An exothermic reaction gives heat off heat to the surroundings.
 - B) Endothermic has a positive ΔH .
 - C) ΔH_{rxn} is the heat of reaction.
 - D) Enthalpy is the sum of a system's internal energy and the product of pressure and volume.
 - E) ΔE_{rxn} is a measure of heat.
- 2) Choose the reaction that illustrates ΔH°_f for $\text{Mg}(\text{NO}_3)_2$. 2) _____
- A) $\text{Mg}(\text{NO}_3)_2(\text{aq}) \rightarrow \text{Mg}^{2+}(\text{aq}) + 2 \text{NO}_3^-(\text{aq})$
 - B) $\text{Mg}(\text{NO}_3)_2(\text{s}) \rightarrow \text{Mg}(\text{s}) + \text{N}_2(\text{g}) + 3\text{O}_2(\text{g})$
 - C) $\text{Mg}^{2+}(\text{aq}) + 2 \text{NO}_3^-(\text{aq}) \rightarrow \text{Mg}(\text{NO}_3)_2(\text{aq})$
 - D) $\text{Mg}(\text{s}) + 2 \text{N}(\text{g}) + 6 \text{O}(\text{g}) \rightarrow \text{Mg}(\text{NO}_3)_2(\text{s})$
 - E) $\text{Mg}(\text{s}) + \text{N}_2(\text{g}) + 3\text{O}_2(\text{g}) \rightarrow \text{Mg}(\text{NO}_3)_2(\text{s})$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

- 3) What volume of benzene (C_6H_6 , $d = 0.88 \text{ g/mL}$, molar mass = 78.11 g/mol) is required to 3) _____
 produce $1.5 \times 10^3 \text{ kJ}$ of heat according to the following reaction?

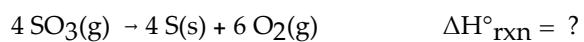


4) A 100.0 mL sample of 0.300 M NaOH is mixed with a 100.0 mL sample of 0.300 M HNO₃ in a coffee cup calorimeter. If both solutions were initially at 35.00°C and the temperature of the resulting solution was recorded as 37.00°C, determine the $\Delta H^\circ_{\text{rxn}}$ (in units of kJ/mol NaOH) for the neutralization reaction between aqueous NaOH and HCl. Assume 1) that no heat is lost to the calorimeter or the surroundings, and 2) that the density and the heat capacity of the resulting solution are the same as water.

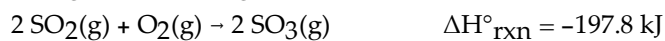
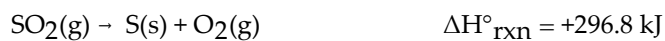
4) _____

5) Use the standard reaction enthalpies given below to determine $\Delta H^\circ_{\text{rxn}}$ for the following reaction:

5) _____

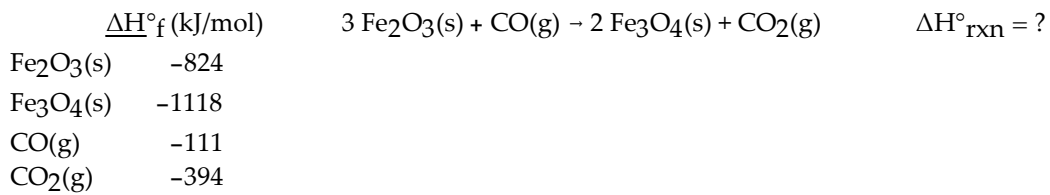


Given:



6) Use the information provided to determine $\Delta H^\circ_{\text{rxn}}$ for the following reaction:

6) _____



7) Explain the difference between ΔH and ΔE .

7) _____

Answer Key

Testname: QUIZ 6.4-6.9

- 1) E
- 2) E
- 3) 42 mL
- 4) -55.7 kJ/mol NaOH
- 5) 1583 kJ
- 6) -47 kJ
- 7) Change in enthalpy (ΔH) only tracks the exchange of heat between a system and its surroundings. Internal energy change (ΔE) tracks both heat and work exchanged between a system and its surroundings.