

HOME WORK 5
CHAPTER 5

Name _____

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

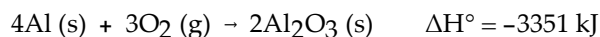
- 1) Which one of the following conditions would always result in an increase in the internal energy of a system? 1) _____
- A) The system loses heat and has work done on it by the surroundings.
 - B) The system gains heat and has work done on it by the surroundings.
 - C) The system loses heat and does work on the surroundings.
 - D) The system gains heat and does work on the surroundings.
 - E) None of the above is correct.

- 2) The value of ΔE for a system that performs 13 kJ of work on its surroundings and loses 9 kJ of heat is _____ kJ. 2) _____
- A) -22 B) -13 C) 22 D) 4 E) -4

- 3) Which one of the following is an endothermic process? 3) _____
- A) Both A and C
 - B) boiling soup
 - C) Hydrochloric acid and barium hydroxide are mixed at 25 °C: the temperature increases.
 - D) ice melting
 - E) water freezing

- 4) A _____ ΔH corresponds to an _____ process. 4) _____
- A) negative, endothermic
 - B) zero, exothermic
 - C) positive, exothermic
 - D) zero, endothermic
 - E) positive, endothermic

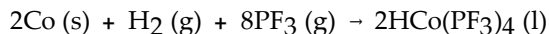
- 5) The reaction 5) _____



is _____, and therefore heat is _____ by the reaction.

- A) exothermic, absorbed
- B) endothermic, absorbed
- C) exothermic, released
- D) endothermic, released
- E) thermoneutral, neither released nor absorbed

6) For the species in the reaction below, ΔH_f° is zero for _____. 6) _____



- A) Co (s)
- B) $\text{HCo(PF}_3)_4$ (l)
- C) PF_3 (g)
- D) H_2 (g)
- E) both Co(s) and H_2 (g)

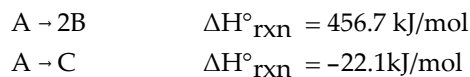
7) A sample of calcium carbonate [CaCO_3 (s)] absorbs 45.5 J of heat, upon which the temperature of the sample increases from 21.1 °C to 28.5 °C. If the specific heat of calcium carbonate is 0.82 J/g-K, what is the mass (in grams) of the sample? 7) _____

- A) 5.0
- B) 5.0×10^3
- C) 410
- D) 3.7
- E) 7.5

8) A 22.44 g sample of iron absorbs 180.8 J of heat, upon which the temperature of the sample increases from 21.1 °C to 39.0 °C. What is the specific heat of iron? 8) _____

- A) 0.140
- B) 0.900
- C) 0.450
- D) 0.840
- E) 0.820

9) Consider the following two reactions: 9) _____



Determine the enthalpy change for the process:



- A) 478.8 kJ/mol
- B) -478.8 kJ/mol
- C) 434.6 kJ/mol
- D) -434.6 kJ/mol
- E) More information is needed to solve the problem.

10) For which one of the following reactions is the value of $\Delta H^\circ_{\text{rxn}}$ equal to ΔH_f° for the product? 10) _____

- A) $2 \text{H}_2 \text{ (g)} + \text{O}_2 \text{ (g)} \rightarrow 2 \text{H}_2\text{O (g)}$
- B) $\text{H}_2\text{O (l)} + 1/2 \text{O}_2 \text{ (g)} \rightarrow \text{H}_2\text{O}_2 \text{ (l)}$
- C) $2 \text{C (s, graphite)} + 2 \text{H}_2 \text{ (g)} \rightarrow \text{C}_2\text{H}_4 \text{ (g)}$
- D) $\text{N}_2 \text{ (g)} + \text{O}_2 \text{ (g)} \rightarrow 2 \text{NO (g)}$
- E) $2 \text{H}_2 \text{ (g)} + \text{O}_2 \text{ (g)} \rightarrow 2 \text{H}_2\text{O (l)}$