

AP Chemistry Practice Multiple Choice – Chapter 5

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

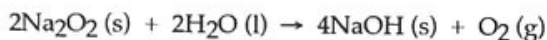
- 1) A chemical reaction that absorbs heat from the surroundings is said to be _____ and has a _____ ΔH at constant pressure.
- A) endothermic, positive
 - B) endothermic, negative
 - C) exothermic, negative
 - D) exothermic, positive
 - E) exothermic, neutral

- 2) The reaction

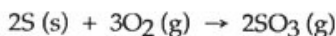


is _____, and therefore heat is _____ by the reaction.

- A) exothermic, released
 - B) exothermic, absorbed
 - C) endothermic, released
 - D) endothermic, absorbed
 - E) thermoneutral, neither released nor absorbed
- 3) The value of ΔH° for the reaction below is -126 kJ . How much heat (in kJ) is released when 2.00 mol of NaOH is formed in the reaction?



- A) 252
 - B) -126
 - C) 7.8
 - D) 63
 - E) 3.9
- 4) The value of ΔH° for the reaction below is -790 kJ . The enthalpy change accompanying the reaction of 0.95 g of S is _____ kJ.

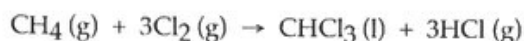


- A) -23
 - B) 12
 - C) -12
 - D) 23
 - E) -790
- 5) The value of ΔH° for the reaction below is -6535 kJ . How many kJ of heat are released in the combustion of 16.0 g of $\text{C}_6\text{H}_6\text{ (l)}$?



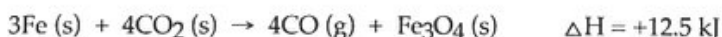
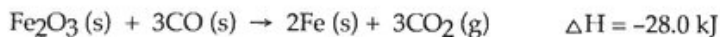
- A) 673
- B) 2.68×10^3
- C) 5.23×10^4
- D) -6535
- E) 1.34×10^3

- 6) The value of ΔH° for the reaction below is -336 kJ. Calculate the heat (kJ) released to the surroundings when 23.0 g of HCl is formed.



- A) 211 B) 177 C) 70.7 D) -336 E) 2.57×10^3
- 7) The specific heat capacity of lead is 0.13 J/g-K. How much heat (in J) is required to raise the temperature of 15 g of lead from 22°C to 37°C ?
A) 29 B) 5.8×10^{-4} C) -0.13 D) 2.0 E) 0.13
- 8) The specific heat of liquid bromine is 0.226 J/g-K. How much heat (J) is required to raise the temperature of 10.0 mL of bromine from 25.00°C to 27.30°C ? The density of liquid bromine: 3.12 g/mL.
A) 16.2 B) 10.4 C) 32.4 D) 5.20 E) 300
- 9) The specific heat capacity of methane gas is 2.20 J/g-K. How many joules of heat are needed to raise the temperature of 5.00 g of methane from 36.0°C to 75.0°C ?
A) 22.9 B) 88.6 C) 429 D) 0.0113 E) 1221
- 10) The ΔH for the solution process when solid sodium hydroxide dissolves in water is -44.4 kJ/mol. When a 13.9-g sample of NaOH dissolves in 250.0 g of water in a coffee-cup calorimeter, the temperature increases from 23.0°C to _____ $^\circ\text{C}$. Assume that the solution has the same specific heat as liquid water, i.e., 4.18 J/g-K.
A) 14.0°C B) 37.8°C C) 40.2°C D) 37.0°C E) 35.2°C

- 11) Given the following reactions



the enthalpy of the reaction of Fe_2O_3 with CO



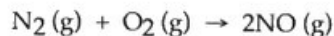
is _____ kJ.

- A) 40.5 B) +109 C) -15.5 D) -109 E) -59.0

12) Given the following reactions



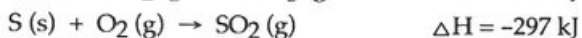
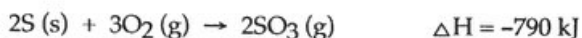
the enthalpy of the reaction of the nitrogen to produce nitric oxide



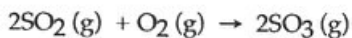
is _____ kJ.

- A) -47.8 B) 47.8 C) 180.6 D) -180.6 E) 90.3

13) Calculate ΔH° (in kJ) for reaction 3.



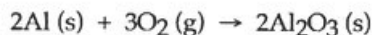
the enthalpy of the reaction in which sulfur dioxide is oxidized to sulfur trioxide



is _____ kJ.

- A) -196 B) -543 C) 1087 D) 196 E) -1384

14) The value of ΔH° for the following reaction is -3351 kJ:



The value of ΔH_f° for $\text{Al}_2\text{O}_3(\text{s})$ is _____ kJ.

- A) -3351 B) -1676 C) +3351 D) -16.43 E) -32.86

15) Given the data in the table below, $\Delta H^\circ_{\text{rxn}}$ for the reaction

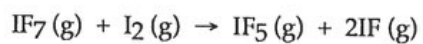


is _____ kJ.

Substance	ΔH_f° (kJ/mol)
$\text{Ca}(\text{OH})_2$	-986.6
H_3AsO_4	-900.4
$\text{Ca}(\text{H}_2\text{AsO}_4)_2$	-2346.0
H_2O	-285.9

- A) -4219 B) -130.4 C) -4519 D) -76.4 E) -744.9

16) Given the data in the table below, $\Delta H^\circ_{\text{rxn}}$ for the reaction



is _____ kJ.

Substance	ΔH_f° (kJ/mol)
IF (g)	-95
IF ₅ (g)	-840
IF ₇ (g)	-941

- A) 311 kJ
- B) 69 kJ
- C) -1991 kJ
- D) -69 kJ
- E) The ΔH_f° of $\text{I}_2(\text{g})$ is needed for the calculation.

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

- 1) A
ID: chem9b 5.1-32
- 2) A
ID: chem9b 5.1-33
- 3) D
ID: chem9b 5.1-35
- 4) C
ID: chem9b 5.1-37
- 5) A
ID: chem9b 5.1-38
- 6) C
ID: chem9b 5.1-40
- 7) A
ID: chem9b 5.1-54
- 8) A
ID: chem9b 5.1-57
- 9) C
ID: chem9b 5.2-5
- 10) D
ID: chem9b 5.1-58
- 11) E
ID: chem9b 5.1-63
- 12) C
ID: chem9b 5.1-64
- 13) A
ID: chem9b 5.1-66
- 14) B
ID: chem9b 5.1-74
- 15) B
ID: chem9b 5.1-81
- 16) E
ID: chem9b 5.1-83