

Practice Test for Thermochemistry

Show all work, this is not just about answers, it's about how you think.

1. How many joules are needed to melt a 1057.8 gram block of ice at 0°C into water.
2. Convert the joules you calculated in question #1 into kilo-joules, calories, and Calories.
3. How many joules are needed to vaporize 4.54 g of liquid water at 373 Kelvin into steam?
4. How many joules is required to warm 73.2 g pure water at 17.0°C to 29.5°C.
5. Which of these reactions is the MOST ENDOTHERMIC?
One mole C₂H₂ synthesizes or two moles nitrogen monoxide synthesizes
6. Which of each of these solutions forming is MOST EXOTHERMIC?
One mole NaCl ionizes in water or one mole ammonium chloride does the same
7. How many KILOjoules are released when you dissolve 5.35 moles of solid NaOH into 2.0 Liters of H₂O that is at 11.0°C?
8. When 11.8 moles of aluminum oxide synthesize, how much energy is released or absorbed?
9. At which temperature does 36.0 grams of copper have the most kinetic energy?
A. 225 K B. 272 K C. 0°C D. 5°C
10. How much energy is released from 35.0 grams of copper (C= 0.391 J/g·°C) if it cools from 93.5°C to 18.2°C?
11. If I + I → I₂ Which statement best describes this chemical process? A bond
A. forms and energy is absorbed B. forms and energy is released
C. breaks and energy is absorbed D. breaks and energy is released
12. When 52.3 g Hg changes temperature from 12.00°C to 33.25°C when 155.6 joules of heat are added. Calculate the specific heat capacity for mercury.
13. Skip this one, okay?
14. If O_{2(G)} → O_(G) + O_(G) Which best describes this chemical process? Energy is
A. absorbed when a bond is broken B. absorbed when a bond forms
C. released when a bond is broken D. released when a bond is formed
15. In a chemical reaction you determine that the $\Delta H = -571.6$ kJ. This reaction is
A. endothermic and absorbs energy B. endothermic and releases energy
C. exothermic and absorbs energy D. exothermic and releases energy
16. In another reaction on Table I you find this $\Delta H = +182.6$ kJ. This reaction is
A. endothermic and absorbs energy B. endothermic and releases energy
C. exothermic and absorbs energy D. exothermic and releases energy

17. Draw a cooling curve for water. Label the line segments with letters from left to right (A, B, C, D, E, F)

Fill in the boxes below the graph on the answer sheet.

Make sure the axes are labeled and there are numbers included with units on the Y axis.

The Cooling Curve for Water



In the boxes below write S, L, G, or \leftrightarrow or \uparrow or \downarrow and formulas

Segment	Phase or phases	Temperature	Kinetic Energy	Potential Energy	Formula used in this segment
AB					
BC					
CD					
DE					
EF					