

Academic Chemistry
Thermo Review Sheet

Name _____

Directions: Answer each question completely.

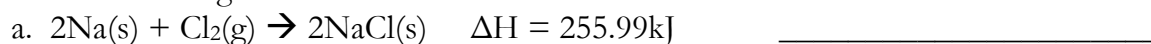
1. What units are used to measure heat?
2. What happens to temperature as a substance goes through the process of freezing?
3. What is the measure of the disorder in a system?
4. Given the following reactions, determine ΔH for the following reaction. Hint: How is the reaction the same? How is it different?
 $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O} \quad \Delta H = -241.8 \text{ kJ}$
 $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2 \quad \Delta H = \underline{\hspace{2cm}}$
5. What is the symbol for change in enthalpy?
6. A 4.0 g sample of metal was heated from 0°C to 20°C . It absorbed 35.2 J of heat. What is the specific heat of this metal?
7. How much energy is required to boil 73.2 grams of water?
8. The specific heat of ethanol is $2.44 \text{ J/g}^\circ\text{C}$. How many kilojoules of energy are required to heat 50.0 g of ethanol from -20°C to 68°C ?
9. What is the term that describes the heat required to raise the temperature of 1 g of a substance by 1°C or 1K ?

10. Draw the energy diagram of an endothermic reaction.

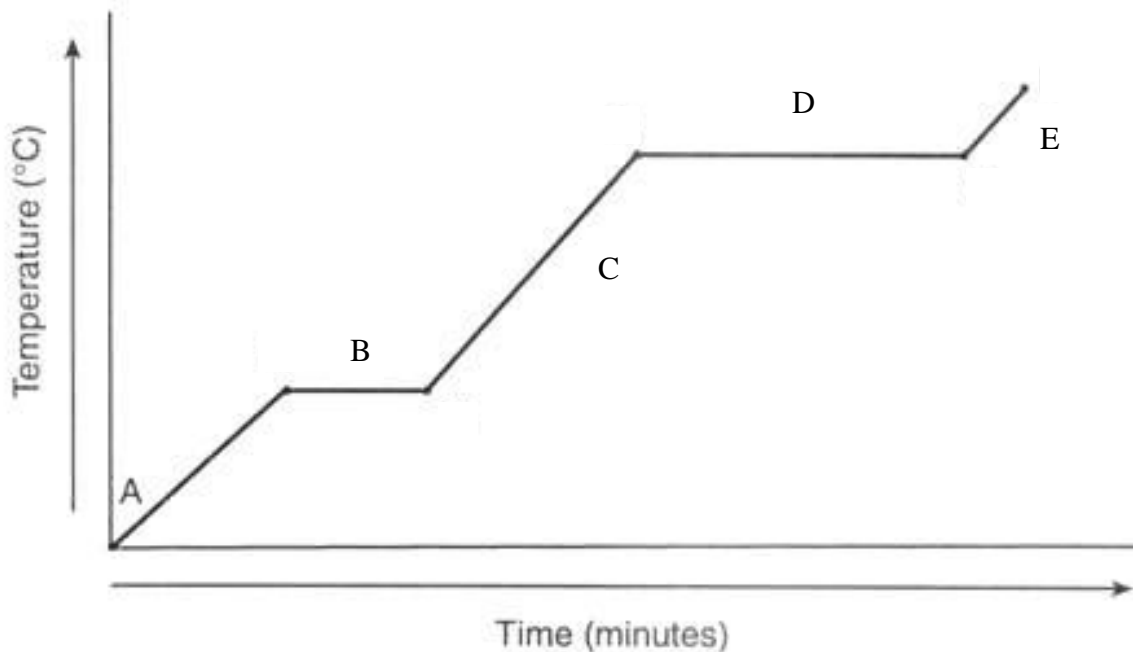
11. Determine the change in entropy does it increase (I) or decrease (D) or No change (NC)



12. Label the following as endothermic or exothermic:



13. Use the following graph to answer the questions below. Use the letters from the graph for your answers.



a. Heating a liquid _____

b. Vaporization _____

c. Increasing kinetic energy _____

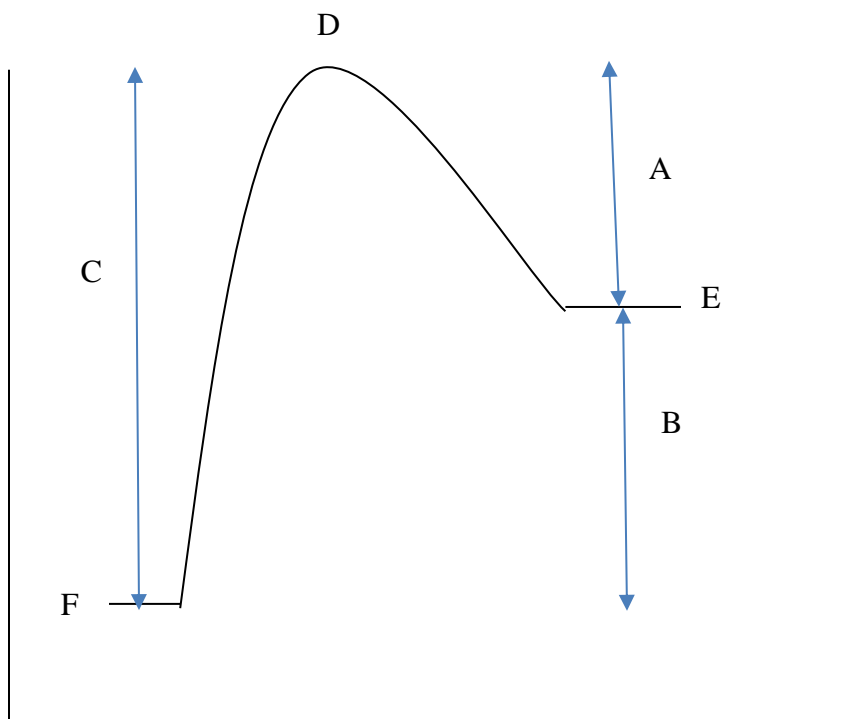
d. Condensing _____

e. Heating a gas _____

f. Melting _____

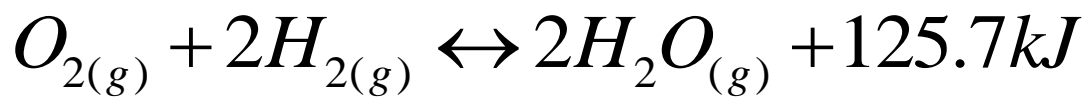
14. Identify each of the labeled letters on the following diagram below using the following words: reactants, activated complex, products, heat of the reaction, activation energy of the reverse reaction, and activation energy of the forward reaction.

What type of reaction does this diagram represent?



15. How many kilocalories are in 5.79×10^3 joules?
16. How many joules are in 91 nutritional food calories?
17. If you have an exothermic reaction, what is the sign of ΔH ?
18. How does a catalyst affect a reaction diagram? (You may use a picture to help your explanation.)
19. Name two ways to increase the rate of a reaction without using a catalyst.

20. Using the following reaction to complete the table below:



Stress	Direction of Shift	[O ₂]	[H ₂]	[H ₂ O]	K _{eq}
Increase concentration of oxygen					
Decrease concentration of hydrogen					
Decrease temperature					
Increase pressure					

21. Write the K_{eq} expression for the reactions:

