

Name: Key

Block: \_\_\_\_\_

Date: \_\_\_\_\_

Chemistry 11

**Energy of Chemical Reactions**  
(17 marks)

Assignment

Answer each of the following questions in full sentences.

1. Is the burning of wood exothermic or endothermic? Explain. (2 marks)

1/2 - exothermic, heat is given off

2. Is the melting of sugar exothermic or endothermic? Explain. (2 marks)

1/2 - endothermic, requires added heat to melt sugar

3. A beaker becomes warm when a reaction occurs in it. Are the chemicals in the beaker gaining or losing energy? Is the reaction endothermic or exothermic? (2 marks)

1/2 - losing energy  
- ∴ exothermic

4. Which contain more energy in an endothermic reaction: the reactants or the products? (1 mark)

1 - products  
(energy was gained from the surroundings during the reaction)

5. In an exothermic reaction, do you have to add or remove energy in order to allow products to form? Explain. (2 marks)

1/2 - Exothermic reactions release energy so energy would be removed to the surroundings  
(some energy may be initially required to break some bonds / get the reaction started)

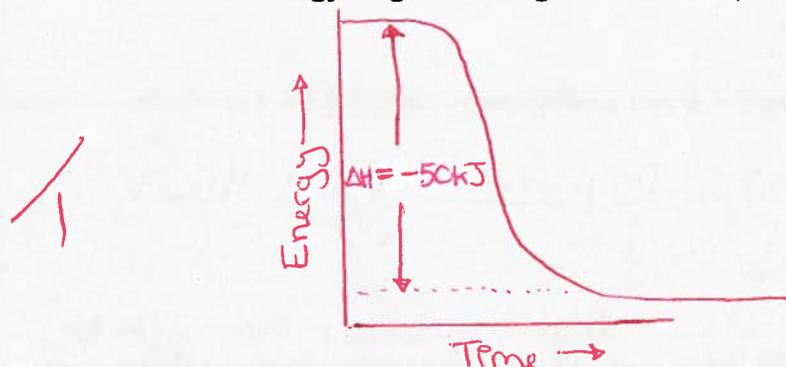
6. Is  $\Delta H > 0$  or  $\Delta H < 0$  for an endothermic reaction? Is  $\Delta H > 0$  or  $\Delta H < 0$  for an exothermic reaction? (2 marks)

1/2  $\Delta H > 0$  (positive) for an endothermic reaction  
 $\Delta H < 0$  (negative) for an exothermic reaction

7. Draw an energy diagram having  $\Delta H = +25 \text{ kJ}$ . (1 mark)



8. Draw an energy diagram having  $\Delta H = -50 \text{ kJ}$ . (1 mark)



9.  $\Delta H = -50 \text{ kJ}$  for the reaction:  $F \rightarrow G$ . Re-write this equation to show the 50 kJ properly on the reactant or product side. (1 mark)



10. If a reaction absorbs 30 kJ of heat, what is  $\Delta H$  for the reaction? (1 mark)

1

$$\Delta H = +30 \text{ kJ}$$

11. If  $P \rightarrow Q + 25 \text{ kJ}$ , what is  $\Delta H$  for the reaction? Which have more energy, the reactants or the products? (2 marks)

2

- $\Delta H = -25 \text{ kJ}$  ✓
- reactants have more energy ✓