The energy in chemicals

Chemistry

ANSWERS

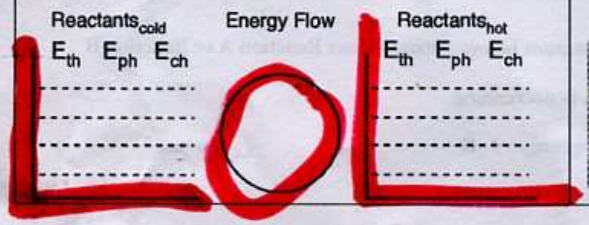
Name_____

Period_____

1. A combustion reaction can be described as follows.

$CH_4 + 2O_2 \rightarrow 2H_2O + CO_2 +$ **energy**

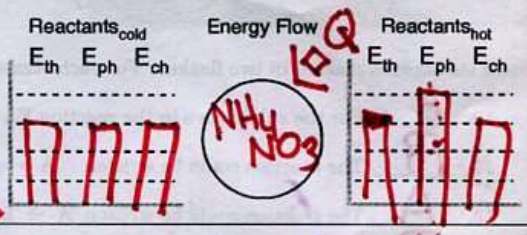
Assuming that the system is WAX, draw an LOL energy chart that shows: wax as the system, both heat and light leaving the system, none of the 'E' changing except E_{ch}.



2. Dissolving ammonium nitrate in a first aid "cold pack" can be described as follows.

$NH_4NO_{3(s)}$ + **energy** → $NH_{4(aq)}$ + $NO_{3(aq)}$

Assuming that the system is NH_4NO_3,, draw an LOL energy chart that shows: a label on the system circle, only heat entering the system, none of the 'E' changing except E_{ph}.



In each graph, draw only the bar graph for E_{ch} before and after. In each case the system is underlined.

3. : for a system where gunpowder burns and gives off energy

Heat is (entering / leaving) the system.

4. If the system is **A ROCK** that is hard to dissolve and needs energy added to dissolve it

Energy is (entering / leaving) .
Energy of the system is (increasing / decreasing).

5. If the **ATP** in your cells gains energy from you digesting a Snickers Bar

The change to the system is (exothermic / endothermic).

6. If the ATP in your cells gains energy from you digesting a **Snickers Bar**

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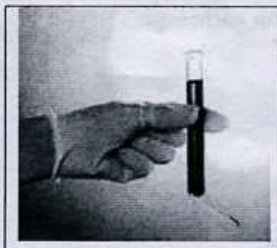


If you mix some Barium Chloride and distilled water in a test tube and hold It in your hand, it feels cold!

7. If **the water and chemicals** are defined as the system, the change in energy was

$\Delta E =$ **(positive / negative)**

The change was (exothermic / endothermic)

8. If **YOUR HAND** is defined as the system, the change in energy was

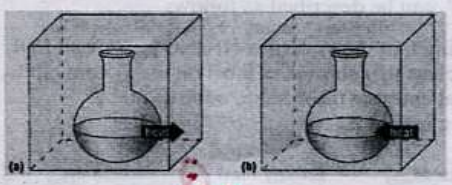
$\Delta E =$ **(positive / negative)**

The change was (exothermic / endothermic)

Answer to #9: In exothermic reactions the products have LESS energy than the reactants.

9. In exothermic reactions, is the energy of the products less or greater than that of the reactants?

Answer to #9: In exothermic reactions the products have LESS energy than the reactants.



Some substances reacted in two flaskes. For each stzatement below, choose either Reaction A or Reaction B

10. A For the substances in the reaction E_{ch} is decreasing
11. B The reaction could be written A + energy → B
12. A The reaction could be written A → B ΔH = -500kJ
13. B The ΔH = + 300 kJ
14. A The reaction is exothermic
15. B The reaction would feel cold if you held the flask in your hand.

Energy in Chemical Reactions

16. Classify the following as exothermic or endothermic:

EXO a. 550 kJ is released EXO

ENDO b. The energy level of the products is higher than that of the reactants.

EXO c. The metabolism of glucose in the body provides energy. FOOD LOSES ENERGY, YOU GAIN

EXO d. The energy level of the products is lower than that of the reactants.

ENDO e. 125 kJ is absorbed.

17. Classify the following as exothermic or endothermic reaction and **give ΔH** for each:

EXO a. Gas burning in a Bunsen burner: $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O + 890$ kJ ΔH = -890 kJ

ENDO b. Dehydrating limestone: $Ca(OH)_2 + 65.3$ kJ $\rightarrow CaO + H_2O$ ΔH = +65.3 kJ

EXO c. Formation of table salt: $2Na + Cl_2 \rightarrow 2NaCl + 2H_2O + 819$ kJ ΔH = -819 kJ

ENDO d. Decomposition of phosphorous pentachloride: $PCl_5 + 67$ kJ $\rightarrow PCl_3 + Cl_2$ ΔH = +67 kJ

TEST ~~Wednesday~~ THURSDAY

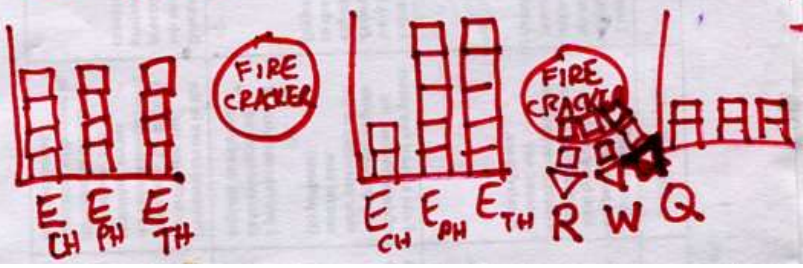
Notebook today.

Quizzes back at the end

Purpose: How Do We Draw A Two Step Energy Chart?

WARMUP take out your NWA homework

#1 How does energy change in a firecracker



#2 CONCLUSION

IN A TWO STEP ENERGY DIAGRAM, ONE STEP HAS NO ENERGY ENTER OR LEAVE; DURING THIS STEP, E_{CH} REARRANGES ITS BLOCK WITH THE OTHER TWO BARS.

IN ONE STEP the bars rearrange

IN ANOTHER STEP energy enters or leaves the system

#3 the Energy CHANGE FOR

$2Na + 2HOH \rightarrow H_2 + 2NaOH +$