PENANG SANGAM HIGH SCHOOL

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P.O.BOX 44, RAKIRAKI

LESSON NOTES

WEEK 12

Year/Level: 13A/B **Subject:** Chemistry

Strand 3	**Reactions**
Sub Strand 3.2	**Thermochemistry**
Content Learning Outcome	By the end of this lesson students should be able: • Define a system and a surrounding. • Describe the three types of 'system' associated with thermochemistry • Define heat of reactions and describe the two types of reactions.

Systems and Surroundings

Universe

- Is everything.

System

- Part of the universe we want to study
  e.g. a beaker containing chemicals can be our system

Surrounding

- Everything else in the universe except the system. e.g. anything outside the beaker is surrounding.

Boundary

- Anything separating a system from its surroundings. Example; a beaker

Types of Systems

1. *Open system*
- Energy and matter can be transferred in and out of a system. E.g. burning rubbish
2. *Closed System*
- Only energy can be transferred out of the system. E.g. cooking curry
3. *Isolated system*
- Where neither energy nor matter can be transferred, e.g. a bomb calorimeter.

Note:

- A system is defined in terms of properties or functions like pressure, temperature, volume, heat, enthalpy, entropy etc.

TAKE A PAUSE, ABSORB THE INFORMATION, THERE ARE A LOT OF DEFINITIONS YOU NEED TO REMEMBER FROM HERE ONWARDS.

ALRIGHT, LETS BEGIN:

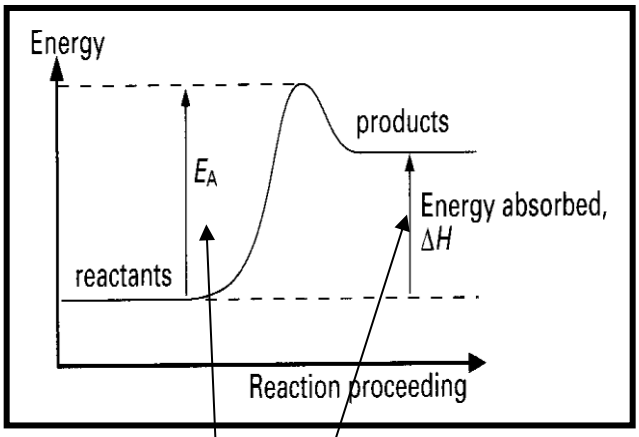
*Heat of Reaction (**q**)*

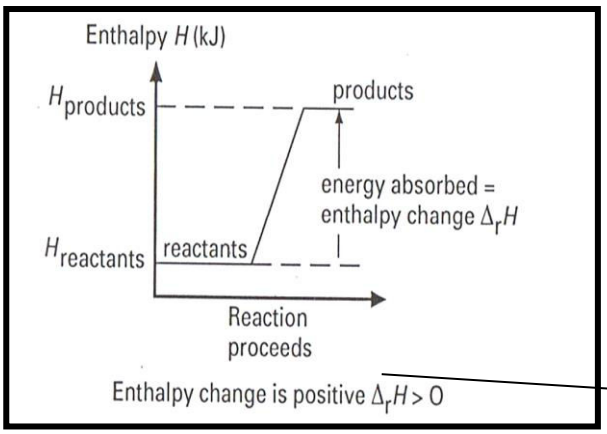
- Energy absorbed or released in reactions

Types of Reactions

Endothermic Reactions

- Reaction in which energy is absorbed from the surrounding.
- Heat of the product is more than the heat of the reactants.
- Surrounding becomes cooler.





NOTE: E_A is the activation energy and its found from the beginning of reactants till the peak of the curve.

ΔH is how much energy is released or absorbed and found from beginning of reactant till end of product

Exercise 1

1. Which statement about enthalpy is true?

A. Heat is given off to the surroundings in endothermic reactions.
B. Some substances have a negative specific heat capacity.
C. Specific heat capacity is the same for all liquids.
D. The sign of ΔH is always negative in exothermic reactions.

2. Thermochemistry is study of_____.

A. Transfer of energy as heat
B. Transfer of mass
C. Transfer of sound
D. Transfer of moles of substance

3. The minimum energy required to transform reactants into an activated complex is called _____.

A. Activation energy
B. Kinetic energy
C. Potential energy
D. Heat energy

The End