

Q1.1) Define the term Bond enthalpy.

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Bond enthalpy is the total amount of energy needed to break a covalent bond.

Q1.1) State the formula for calculating bond enthalpy.

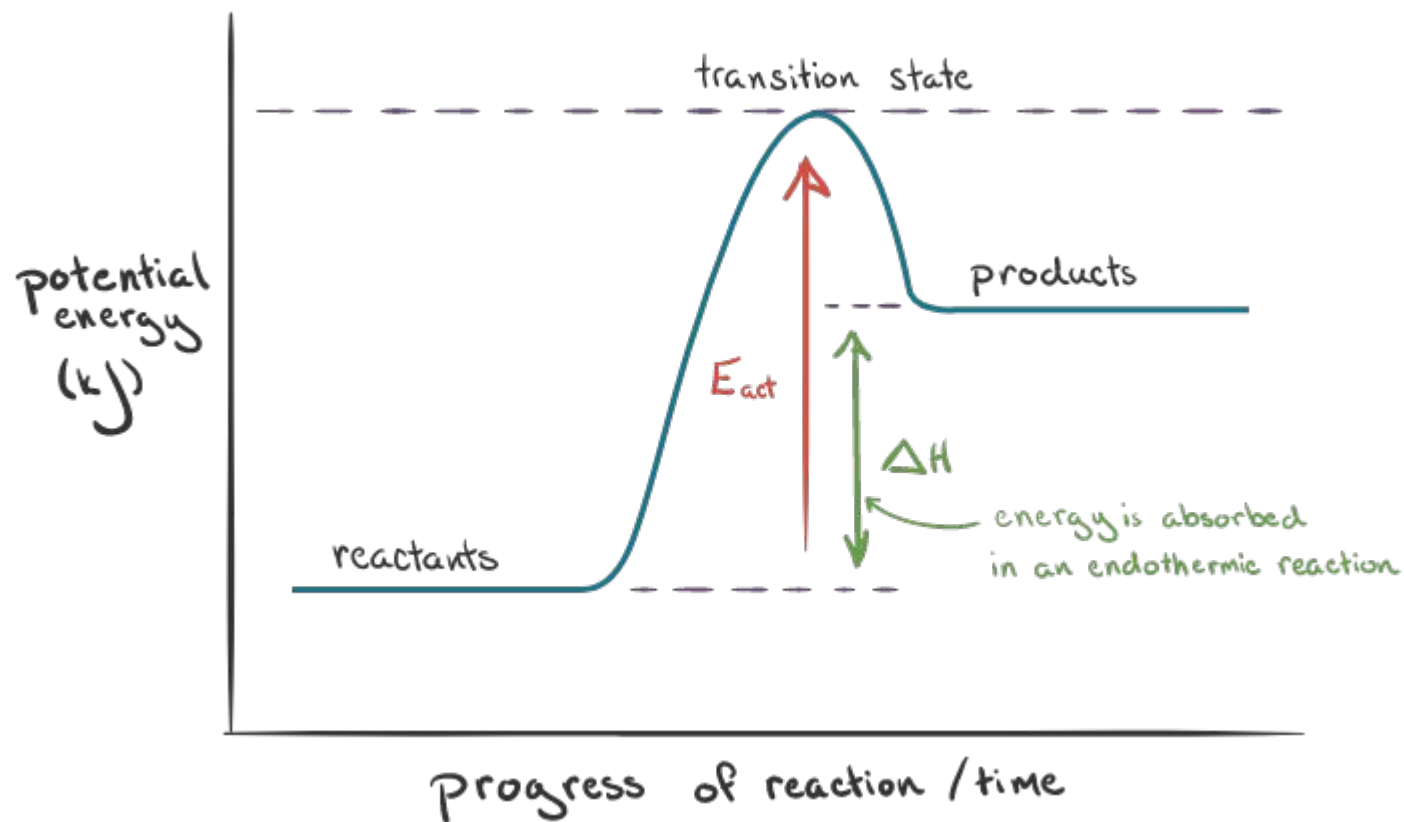
Q1.1) State the formula for calculating bond enthalpy.

$$\text{Bond enthalpy} = \sum \text{Bond breaking} - \sum \text{Bond making}$$

Q1.1) Define the term Endothermic.

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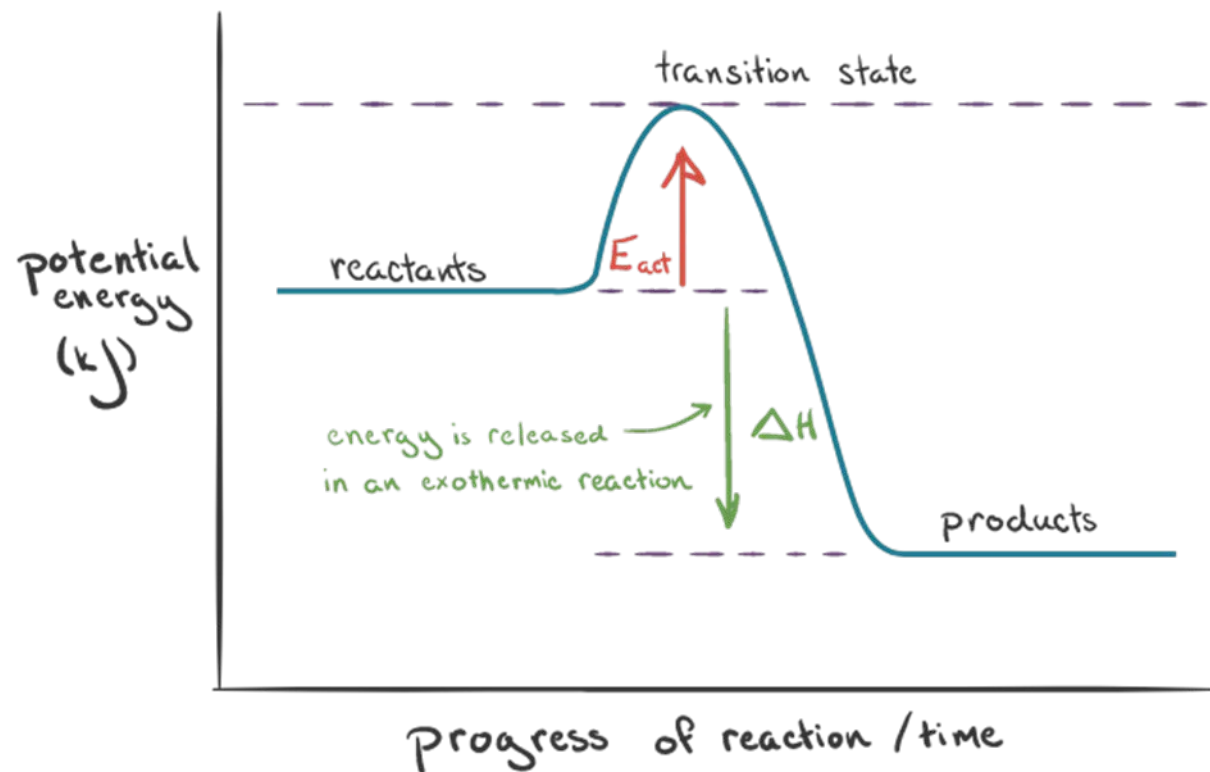
- Energy absorbed from the surroundings
- It is also commonly referred to as bond breaking.



Q1.1) Define the term Exothermic.

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- Energy that is released to the surroundings.
- It is also known as bond making



Q1.1) Describe what is meant by the term 'standard conditions'.

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Standard conditions means that it is done at Standard room temperature and pressure. This means:

- 1 mole
- 101KPa ~ 101,000Pa
- 298K

Q1.1) Define the term 'Enthalpy change of reaction.'

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The enthalpy change when molar quantities react in a balanced equation under standard conditions.

Q1.1) Define the term Enthalpy change of Combustion.

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Where one mole of fuel is completely burnt in excess oxygen under standard conditions.

Q1.1) Define the term Enthalpy change of Neutralisation .

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The enthalpy change when one mole of hydroxide ion reacts with one mole of hydrogen ions to form one mole of water under standard conditions in a solution of 1.0 mol/dm^3

Q1.1) Define the term Enthalpy change of Formation .

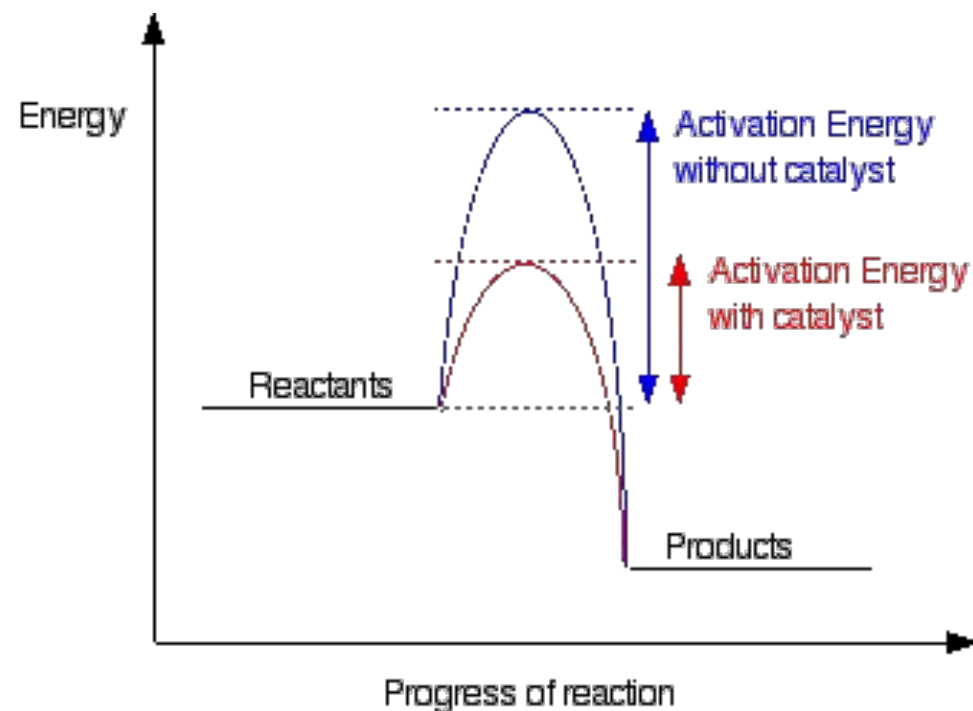
Q1.1) Define the term Enthalpy change of Formation .

The change in enthalpy change during formation of one mole of a substance from its constituent element with all its substances in its standard state.

Q1.1) Describe what is a catalysis.

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Catalysts = Substances that increase the rate of reaction by lowering the activation energy providing an alternative pathway without being used up.



Q1.1) Describe what is the difference between a homogenous and heterogeneous catalysis.

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Heterogeneous catalysis = Both reactants and catalysts are in different states

Homogeneous catalysts = Both reactants and catalysts are in the same state

Q1.1) Describe the mechanism for a heterogeneous catalysis.

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1. Reactants are adsorbed onto the catalytic surface.
2. Bonds in the reactants are weakened and broken.
3. Bonds in the products are made.
4. Products diffuse away from the catalytic surface.

Q1.1) Define the term catalyst poison.

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Catalyst poison = Reactants are unable to be adsorbed onto the catalytic surface due to the accumulation of soot from incomplete combustion.

Q1.1) Describe the relationship between bond length and bond strength.

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Bond length and bond strength are directly proportional to each other. An increase in bond length is due to the number of inner subshells present.

This is because the greater the bond length, the less energy it requires to break the bond.

This is because there is less attraction between the outer electrons and the positive nucleus.

Hence requires less energy to break the bond.