

Potential energy diagrams

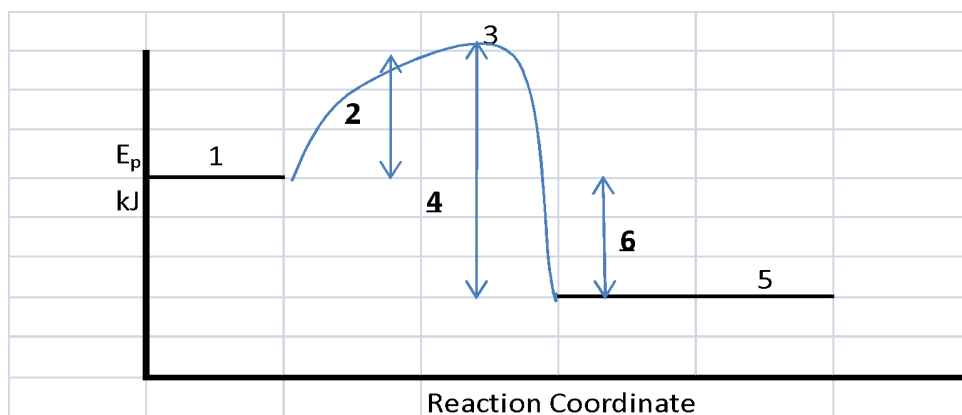
1. Numerical response question

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Left justify your answer in the boxes provided.

Consider the following potential energy diagram below.

Exothermic Reaction for the combustion of a gas



Alyson looks carefully at the numbers on the diagram.

She interprets that four numbers can be used to identify

- The position of reactants
- The position of the products
- The arrow that represents the activation energy
- The arrow that represents the enthalpy change of the reaction.

The four numbers (in the order given) are ____, ____, ____ and ____

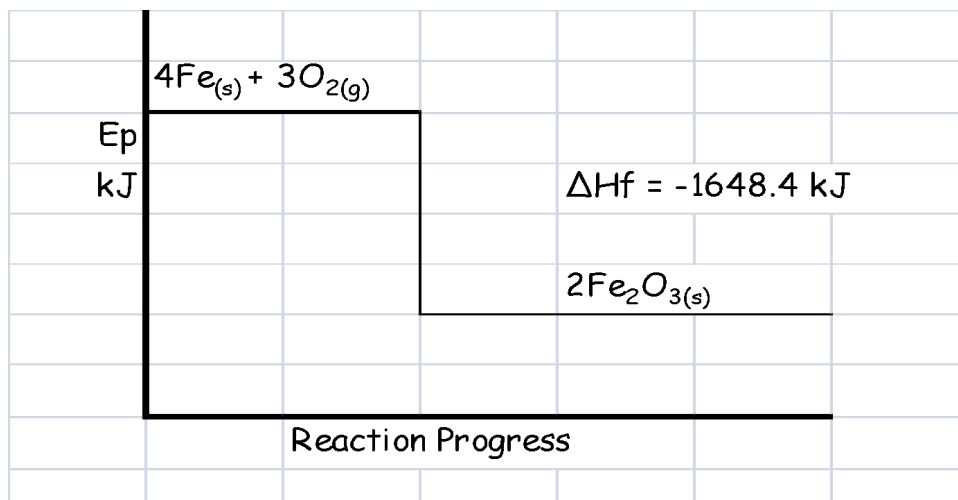
2. Numerical response question

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Left justify your answer in the boxes provided.

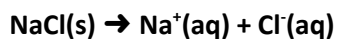
Consider the following energy diagram

Enthalpy of Formation for Iron (III) oxide



The energy absorbed when 0.375 mol of $\text{Fe}_2\text{O}_{3(s)}$ decomposes to form $\text{Fe}_{(s)}$ and $\text{O}_{2(g)}$ is _____ kJ.

3. A student dissolves some NaCl(s) in a beaker of water. This process is represented by the equation



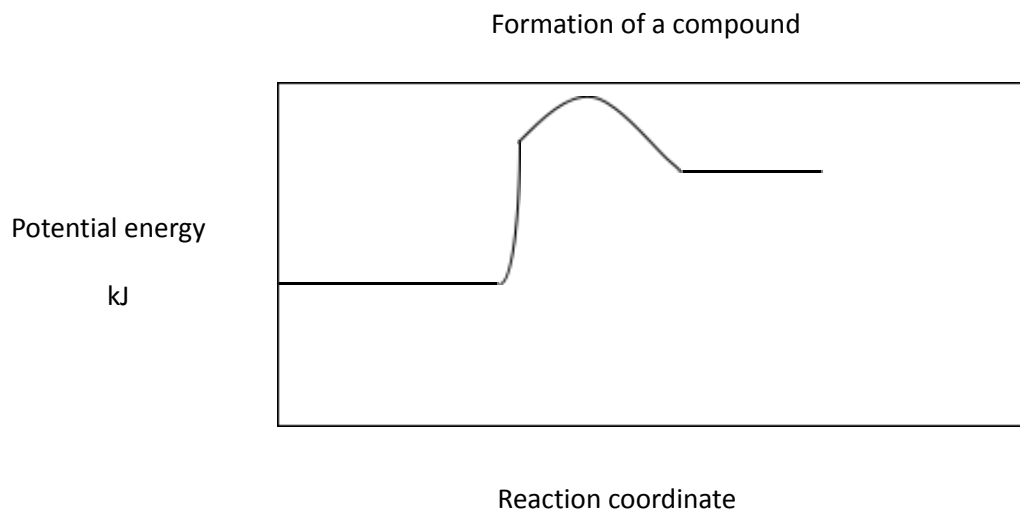
The following observations were made:

Initial temperature of water	21.2 °C
Final temperature of water	19.6 °C

Based on this data, which conclusion is justified?

a	The reaction has a negative ΔH value
b	The potential energy of 1 mol of NaCl(s) is lower than the combined potential energy of one mole of $\text{Na}^+(\text{aq})$ and $\text{Cl}^-(\text{aq})$.
c	The potential energy of 1 mol of NaCl(s) is higher than the combined potential energy of one mole of $\text{Na}^+(\text{aq})$ and $\text{Cl}^-(\text{aq})$.
d	Dissolving NaCl(s) in water is exothermic.

4. Use the following diagram to answer the next question.



The graph above could represent the formation of _____.

a	Ethane
b	Ethanol
c	Ethene
d	Ethanoic acid

5. Shane and Tim sketch a potential energy diagram and note that the activation energy for the forward reaction is 96 kJ of energy.

Justin looks at their diagram and observes that the activation energy for the REVERSE reaction is 42 kJ. Based on this information, David says the ΔH for the FORWARD reaction is _____ kJ.

a	-138
b	+138
c	+54
d	-54

Solutions:

1. 1526
2. 309
3. B
4. C
5. C