(Catalysts)

Q1. (2018)

The catalyst in catalytic converters is a mixture of three elements.

Where in the periodic table are these elements most likely to be found?

[1 mark]

Tick **one** box.

- Alkali metals ☐
- Halogens ☐
- Noble gases ☐
- Transition metals ☐

Q2. (2018)

This question is about methanol.

Methanol is broken down in the body during digestion.

What type of substance acts as a catalyst in this process?

[1 mark]

Tick **one** box.

- Amino acid ☐
- Enzyme ☐
- Ester ☐
- Nucleotide ☐

Q3. (2018)

A catalyst is used in the reaction to produce methanol from carbon monoxide and hydrogen.

Explain how a catalyst increases the rate of a reaction.

[2 marks]

Q4. (2018)

Suggest why a catalyst is used in this industrial process.

Do **not** give answers in terms of increasing the rate of reaction.

[1 mark]

Q5. (2018)

Suggest the effect of using the catalyst on the equilibrium yield of methanol.

[1 mark]

Q6. (2021)

The activation energy for the reaction between zinc and sulfuric acid is lowered if a solution containing metal ions is added.

What is the most likely formula of the metal ions added?

[1 mark]

Tick (✓) **one** box.

Al^{3+} ☐

Ca^{2+} ☐

Cu^{2+} ☐

Na^{+} ☐

Q7. (2023)

Manganese dioxide catalyses the decomposition of hydrogen peroxide solution.

Oxygen and water are produced.

Explain how a manganese dioxide catalyst increases the rate of decomposition of hydrogen peroxide.

[2 marks]

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