

SECTION A

Answer **all** questions in the spaces provided.

1 This question is about the use of transition metals as catalysts.

1 (a) State how a catalyst speeds up a chemical reaction.

.....
.....
(2 marks)

1 (b) State the characteristic property of transition metals that enables them to act as catalysts in redox reactions.

.....
(1 mark)

1 (c) In the Contact Process for the conversion of sulfur dioxide into sulfur trioxide, vanadium(V) oxide acts as a heterogeneous catalyst.

1 (c) (i) Write **two** equations to show how the catalyst is involved in this reaction.

Equation 1
Equation 2
(2 marks)

1 (c) (ii) Suggest **one** reason why poisoning reduces the effectiveness of a heterogeneous catalyst.

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(1 mark)

1 (c) (iii) Suggest how poisoning of a catalyst, used in an industrial process, can be minimised.

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(1 mark)

