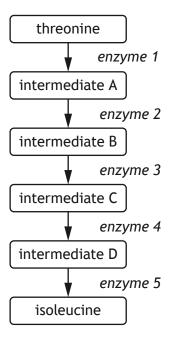
MARKS DO NOT WRITE IN THIS MARGIN

The diagram shows a metabolic pathway, which converts the amino acid threonine to another amino acid isoleucine in cells.



Enzyme 1 catalyses the breakdown of threonine to intermediate A.

(a) (i) Name this type of metabolic reaction.

1

(ii) Describe what happens to the active site of enzyme 1 when threonine binds to it and explain how this increases the rate of reaction.

2

Description \_\_\_\_\_

Explanation \_\_\_\_\_

[Turn over

## (continued)

(b) When concentrations of isoleucine reach a high level, the metabolic pathway is blocked.

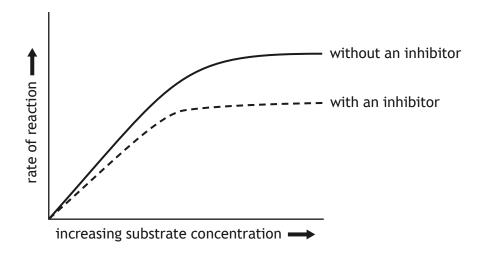
Describe how this happens and suggest how this is an advantage to the cell.

2

Description \_\_\_\_\_

Advantage \_\_\_

(c) The graph shows the rate of isoleucine synthesis with and without an inhibitor.



(i) Explain why the rate of reaction levels off at high substrate concentrations without an inhibitor.

1

(ii) This is an example of non-competitive inhibition.

Use information from the graph to support this statement.

1