

# Antibiotics

## Question Paper 1

<b>Level</b>	International A Level
<b>Subject</b>	Biology
<b>Exam Board</b>	CIE
<b>Topic</b>	Infectious disease
<b>Sub Topic</b>	Antibiotics
<b>Booklet</b>	Theory
<b>Paper Type</b>	Question Paper 1

**Time Allowed :** 68 minutes

**Score :** / 56

**Percentage :** /100

**Grade Boundaries:**

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%



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- 4 Penicillin is an antibiotic that interferes with the synthesis of cell walls in bacteria. Even before penicillin became widely available in the 1940s, the enzyme penicillinase which breaks down penicillin had been isolated. This enzyme is now found in many bacteria and gives them resistance to penicillin.

Fig. 4.1 is a ribbon model of the structure of the enzyme penicillinase. The arrow indicates the active site of the enzyme.



Fig. 4.1

- (a) Explain why the shape of the active site of an enzyme, such as penicillinase, is important.

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..... [3]



- (b) With reference to Fig. 4.1, identify the aspects of protein structure that are shown and those that are **not** shown.

*aspects of protein structure shown*

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*aspects of protein structure not shown*

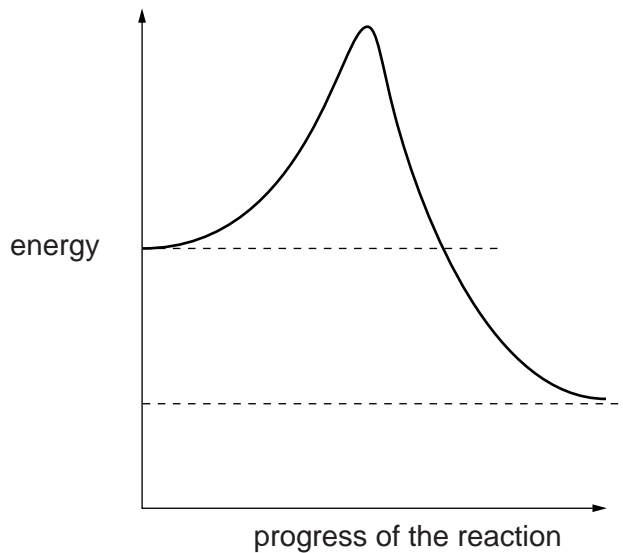
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..... [3]

Fig. 4.2 shows the changes in energy during the progress of an uncatalysed reaction.



**Fig. 4.2**

- (c) (i) Draw on Fig. 4.2 a curve to show changes in energy during the progress of the same reaction when catalysed by an enzyme. [2]

- (ii) State the term given to the energy level that must be overcome before a reaction can progress.

..... [1]

**(d)** Antibiotic resistance is a serious worldwide problem.

Suggest how antibiotics can be used effectively to avoid the development of widespread resistance in bacteria.

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..... [2]

[Total: 11]