

<b>Total marks</b>	12
<b>Time allowed</b>	Approximately 25 minutes
<b>Instructions</b>	Answer ALL questions. Write answers in the spaces provided.

**Question 1**

Three antibiotic discs (X, Y, Z) were placed on agar plates containing bacteria. After 48 hours at 25°C, the zones of inhibition were measured.

Antibiotic	Zone diameter — plate 1 (mm)	Plate 2 (mm)	Plate 3 (mm)	Mean zone diameter (mm)
X	24	22	26	24.0
Y	8	10	9	9.0
Z	0	0	0	0.0

A student grows bacteria on agar plates and places antibiotic discs to investigate which antibiotic is most effective. The table shows the results.

[0 marks]

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**Question 2**

Using the results, state which antibiotic is most effective against the bacteria. Explain your reasoning.

[2 marks]

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**Question 3**

Antibiotic Z produced no zone of inhibition. What conclusion can you draw about the bacteria and antibiotic Z?

[2 marks]

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**Question 4**

The student incubated the plates at 25°C. Explain why 25°C is used rather than 37°C (body temperature) in school experiments.

[2 marks]

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**Question 5**

Describe THREE techniques the student should use to prevent contamination of the agar plates during the experiment.

[3 marks]

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**END OF QUESTIONS — Total: 9 marks**