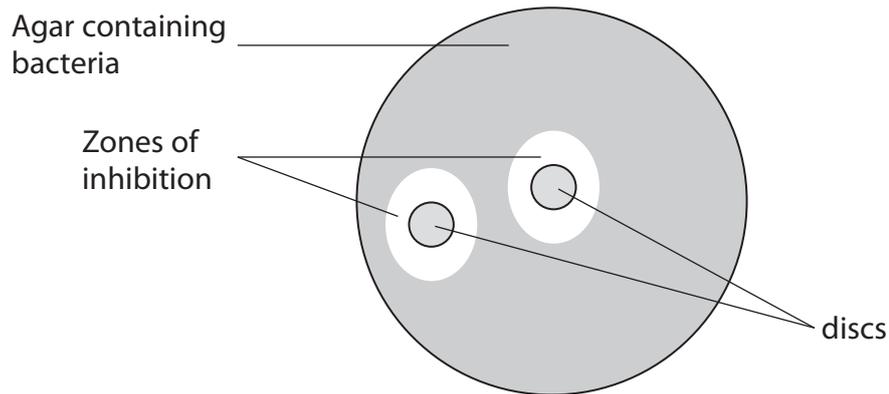


7 An investigation was carried out to study the antimicrobial properties of garlic.

A piece of garlic was crushed with 5 cm<sup>3</sup> of sterile water to form a full-strength extract.

Two sterilised paper discs were each soaked in the full-strength extract. Both discs were placed on an agar plate covered in the bacterium *Micrococcus luteus*. This plate was incubated at 25 °C for 24 hours.

After this time, the diameter of the zone of inhibition around each disc was measured and the mean diameter was calculated.



This procedure was repeated using different dilutions of the full-strength extract.

The results of the investigation are shown in the table below.

Concentration of extract as a percentage of the full-strength extract (%)	Mean diameter of zone of inhibition / mm
100	18
80	17
60	16
40	12
20	8



(a) Using the information in the table, describe the effect of the concentration of garlic extract on the mean diameter of the zone of inhibition.

(3)

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(b) Suggest which concentration of garlic extract has the strongest antimicrobial properties. Give an explanation for your answer.

(3)

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(c) Suggest a suitable control for this investigation.

(1)

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(d) The discs were sterilised by being placed in alcohol and then left to dry before being soaked in the extract.

Suggest why the discs should be sterilised before being soaked in the extract.

(2)

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(e) Suggest how the results in the table might have been different if the discs had not been allowed to dry after being placed in alcohol. Explain your answer.

(2)

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**(Total for Question 7 = 11 marks)**

