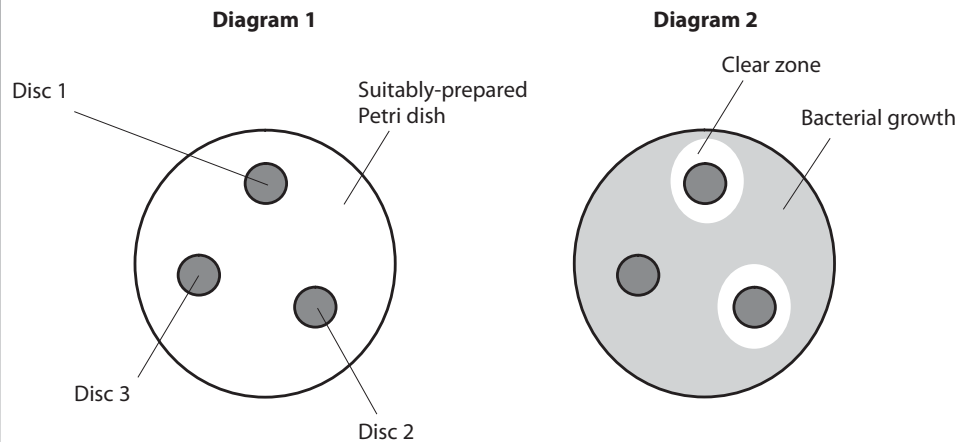


**8** A student investigated the antimicrobial properties of tea tree oil.

She cut three identical discs of blotting paper. She soaked disc 1 in 100% tea tree oil, disc 2 in 50% tea tree oil and 50% vegetable oil and disc 3 in 100% vegetable oil. She then placed all three discs onto a single suitably-prepared Petri dish as shown in diagram 1.

She incubated the Petri dish at 25°C for 24 hours. The results of the incubation are shown below in diagram 2.



(a) Suggest what is meant by the phrase **suitably-prepared Petri dish**.

(2)

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(b) (i) Describe the function of disc 3.

(1)

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(ii) Explain why clear zones are found around disc 1 and disc 2.

(2)

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(iii) The clear zone around disc 1 is not a circle. Suggest how you would calculate the mean diameter of this clear zone.

(2)

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**QUESTION 8 CONTINUES ON THE NEXT PAGE**



- (c) The mean diameters of the clear zones around disc 1 and disc 2 were found to be the same. This suggests that both strengths of tea tree oil had equally effective antimicrobial properties.

Describe how you would determine the minimum strength of tea tree oil that would be as effective as the 100% tea tree oil.

(3)

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- (d) Suggest **one** reason why it was good safety practice to incubate the Petri dish at 25°C rather than at 37°C.

(2)

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**(Total for Question 8 = 12 marks)**

**TOTAL FOR PAPER = 80 MARKS**

