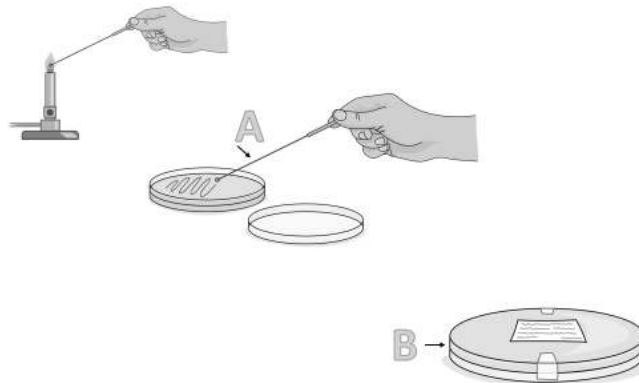


0 1

The diagram below shows the equipment needed to produce an uncontaminated culture of a bacteria species



0 1

1

Name the apparatus labelled A and B

[2 marks]

A **Inoculating loop**

B **petri dish**

0 1

2

Adhesive tape is used to secure the lid on apparatus B. Explain why

[2 marks]

to stop bacteria getting out [1]

to stop bacteria getting in [1]

whilst maintaining air flow/not being completely air tight to allow aerobic respiration [1]

0 1

3

Once an uncontaminated culture of bacteria has been set up in a school experiment it then needs to be incubated. What temperature should the bacteria in apparatus B grow in during this experiment? Give a reason for your answer.

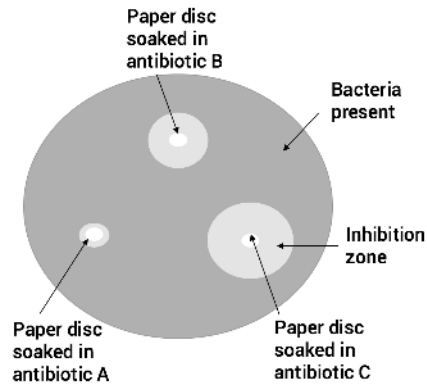
10°C 25 °C 50 °C

Reason: 25 degrees C [1] warm enough to allow (bacterial) enzymes to work close to their optimum/lower than body temperature/reduces the risk of culturing human pathogens [1]

[2 marks]

0 2 .

After culturing an uncontaminated species of bacteria, students at a school wanted to compare the effect of 3 different antibiotics A, B and C on the growth of the bacteria. The results of this experiment are shown below.



0 2 . 1

Which antibiotic; A, B or C was most effective against this bacteria? Explain your answer

[2 marks]

antibiotic C [1]

Biggest/widest inhibition zone/largest area of inhibition/largest area where bacteria were not able to grow [1]

0 2 . 2

One way of comparing the effectiveness of different antibiotics on bacterial growth is the measure the area of the inhibition zone. Describe how to calculate this.

[3 marks]

measure the diameter of inhibition zone/circle with ruler or vernier callipers [1]

half this to get the radius [1]

then use the formula below to calculate the area [1]

$$\pi r^2$$

0 2 . 3

State 2 control variables appropriate to this investigation

[2 marks]

volume of antibiotic [1]

concentration of antibiotic [1]

incubation time and temperature [1]

particle size of antibiotic (difficult to control but smaller molecules would diffuse faster through the bacterial culture/agar)