# AQA – Infection and response – GCSE Biology Paper_2

**1.** June/2021/Paper_1F/No.2

**0 2** Antibiotics are used to treat bacterial infections.

**0 2 . 1** Which substance is used as an antibiotic?

**[1 mark]**

Tick (✓) **one** box.

Aspirin ☐

Digitalis ☐

Penicillin ☐

Gonorrhoea and chlamydia are two sexually transmitted infections.

Gonorrhoea and chlamydia infections can be treated with antibiotics.

**0 2 . 2** Give **one** symptom of gonorrhoea.

**[1 mark]**

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A scientist investigated which antibiotics were most effective at treating gonorrhoea and chlamydia.

This is the method used.

1. Grow gonorrhoea bacteria in a Petri dish.

2. Prepare four different antibiotic solutions, **A**, **B**, **C** and **D**, of the same concentration.

3. Cut four filter paper discs to the same size.

4. Soak each paper disc in a different antibiotic solution.

5. Put the four paper discs into the Petri dish.

6. Repeat steps 3 to 5 using a Petri dish with chlamydia bacteria growing in it.

7. Keep both Petri dishes at 25 °C for 3 days.

**0 2 . 3** Give **two** control variables used in this investigation.

**[2 marks]**

1 _____

_____

2 _____

_____

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**0 2 . 3** Give **two** control variables used in this investigation.

**[2 marks]**

1 _____

_____

2 _____

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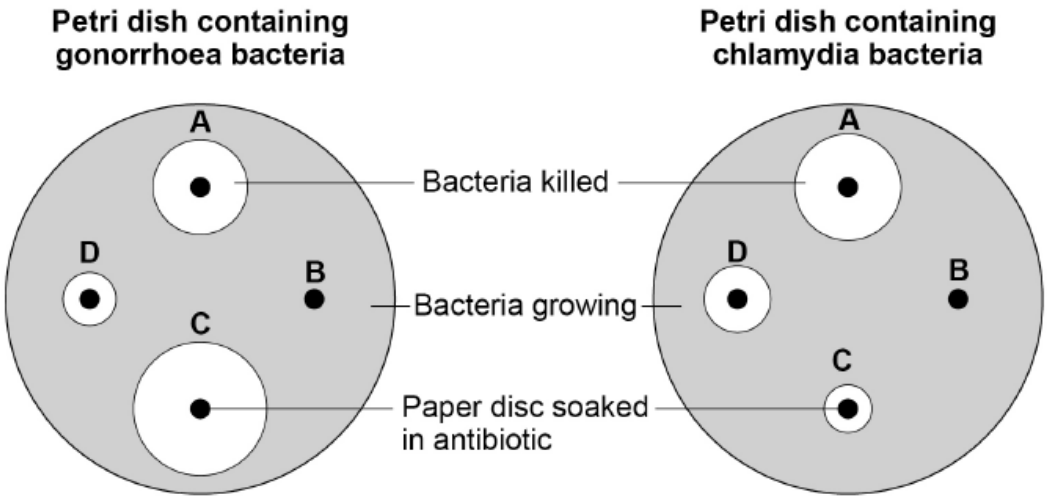
**Figure 2** shows the results.

A clear area around a paper disc is where the antibiotic has killed the bacteria.

**Figure 2**




**0 2 . 4** Which antibiotic did **not** kill either type of bacterium?

**[1 mark]**

Tick (✓) **one** box.

**A** ☐ **B** ☐ **C** ☐ **D** ☐

**0 2 . 5** Which antibiotic would be the most effective to treat a person with a **gonorrhoea** infection?

**[1 mark]**

Tick (✓) **one** box.

**A** ☐ **B** ☐ **C** ☐ **D** ☐

**0 2 . 6** Which antibiotic would be the most effective to treat a person who had both gonorrhoea **and** chlamydia infections?

**[1 mark]**

Tick (✓) **one** box.

**A** ☐ **B** ☐ **C** ☐ **D** ☐

**0 2 . 7** Antibiotics **cannot** be used to treat HIV infections.

Suggest **one** reason why.

**[1 mark]**

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Fungi can cause an infection of the fingernails and toenails.

Fungal nail infections can spread from one person to another person.

**0 2 . 8** Some people go to nail salons to have their nails shaped and painted.

Suggest **one** way workers in nail salons can reduce the risk of infections being spread.

**[1 mark]**

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**0 2 . 9** Suggest **one** reason why fungal infection of toenails is more common than fungal infection of fingernails.

**[1 mark]**

_____

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**2.** June/2021/Paper_1H/No.3

**0 3** Fermentation in yeast is used in the manufacture of bread and alcoholic drinks.

The equation for fermentation is:

glucose → ethanol + carbon dioxide

**0 3 . 1** Fermentation is an exothermic reaction.

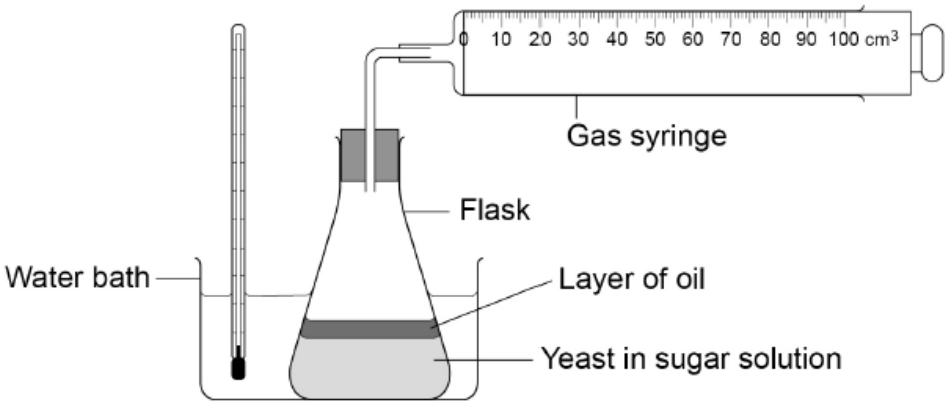
What does exothermic mean?

**[1 mark]**

A student investigated the effect of temperature on fermentation in yeast.

**Figure 3** shows the apparatus.

**Figure 3**



This is the method used.

1. Mix yeast with sugar solution in a flask.

2. Pour a layer of oil over the surface of the mixture.

3. Put the flask in a water bath at 2 °C and leave for 20 minutes.

4. Attach a gas syringe.

5. Record the volume of gas collected every 5 minutes for 30 minutes.

6. After 30 minutes move the flask to a water bath at 35 °C.

7. Continue to record the volume of gas collected every 5 minutes.

**0 3 . 2** Suggest why a layer of oil was needed on the surface of the mixture.

**[1 mark]**

**0 3 . 3** Suggest why the mixture was left for 20 minutes before the gas syringe was attached.

**[1 mark]**

Steps 1 to 4 of the method were repeated at 35 °C.

The volume of gas collected was recorded every 5 minutes for 45 minutes.

**Table 2** shows the results for both flasks for the first 30 minutes.

**Table 3** shows the results for the last 15 minutes, when both flasks were at 35 °C.

**Table 2**

| Time in minutes | Volume of gas collected in $cm^3$ | |
|---|---|---|
| | Flask at 2 °C | Flask at 35 °C |
| 0 | 0 | 0 |
| 5 | 0 | 26 |
| 10 | 0 | 52 |
| 15 | 0 | 78 |
| 20 | 0 | 98 |
| 25 | 0 | 108 |
| 30 | 0 | 115 |

**Table 3**

| Time in minutes | Volume of gas collected in $cm^3$ | |
|---|---|---|
| | Flask at 2 °C moved to 35 °C | Flask kept at 35 °C |
| 35 | 2 | 120 |
| 40 | 7 | 123 |
| 45 | 22 | 124 |

**0 3 . 4** Explain the results from 0 minutes to 45 minutes for the flask that was at 2 °C and was then moved to 35 °C.

Use **Table 2** and **Table 3**.

**[3 marks]**

**0 3 . 5** Explain the results from 0 minutes to 45 minutes for the flask kept at 35 °C.

Use **Table 2** and **Table 3**.

**[4 marks]**