AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.5.3.5

The use of hormones to treat infertility (HT only)

Past-paper questions

Tier	**Higher**
Question groups	**4**
Available paper years	**2021–2024**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 01

November 2021 | 8464/B/1H | Original Q4

0 4 Pathogens are microorganisms that cause diseases.

Gonorrhoea, malaria and measles are three diseases in humans.

0 4 . 1 Draw **one** line from each disease to the pathogen that causes the disease.

[3 marks]

Disease	Pathogen
	Bacterium
Gonorrhoea	
	Fungus
Malaria	
	Protist
Measles	
	Virus

Question 4 continues on the next page

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 01 · continued

0 4 . 2 Malaria is transmitted by mosquitos.

Male mosquitos can be sterilised so they are infertile.

The spread of malaria is reduced by releasing sterile mosquitos into the environment.

Explain how releasing sterile mosquitos reduces the spread of malaria.

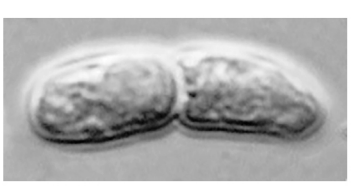
[2 marks]

Pathogens also cause diseases in plants.

Figure 4 shows a rose black spot fungal spore and a tobacco mosaic virus.

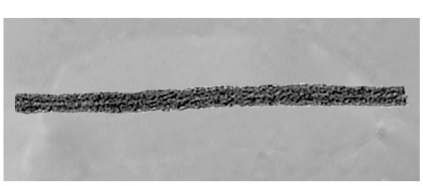
Figure 4

Rose black spot fungal spore



16 µm

Tobacco mosaic virus



2.5×10^{-7} m

Images are **not** to the same scale

0 4 . 3 Name the piece of equipment used to view the virus.

[1 mark]

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 01 · continued

0 4 . 4 How many times longer is the fungal spore than the virus?

Use **Figure 4**.

[3 marks]

Number of times longer = _____

0 4 . 5 Explain why plants infected with tobacco mosaic virus grow slowly.

[3 marks]

12

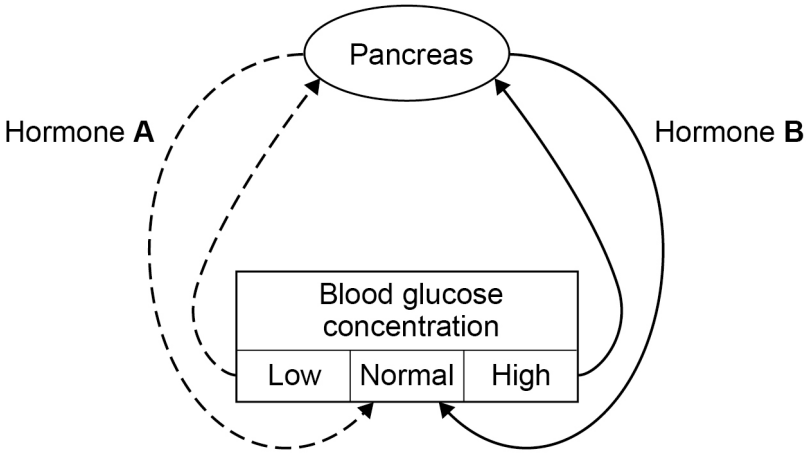
4.5.3.5 The use of hormones to treat infertility (HT only)

Question 02

0 5 Blood glucose concentration in the human body needs to be kept within the normal range.

Figure 4 shows that two hormones control blood glucose concentration.

Figure 4



0 5 . 1 Name the type of hormonal control shown in **Figure 4**.

[1 mark]

_____

0 5 . 2 Name hormones **A** and **B** in **Figure 4**.

[1 mark]

A _____

B _____

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 02 · continued

0 5 . 3 Explain how the two hormones in **Figure 4** keep the blood glucose concentration within the normal range for 3 hours after a meal.

[6 marks]

Question 5 continues on the next page

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 02 · continued June 2022 | 8464/B/2H | Original Q5

Female reproductive hormones are used to treat infertility in women.

0 5 . 4 Follicle Stimulating Hormone (FSH) and then Luteinising Hormone (LH) can be injected into a woman to help her become pregnant by sexual intercourse.

Explain how injecting FSH and then LH will help a woman to become pregnant.

[3 marks]

0 5 . 5 In some women the injections of FSH and LH are the first steps for In Vitro Fertilisation (IVF).

Describe the remaining steps in IVF.

[4 marks]

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 02 · continued June 2022 | 8464/B/2H | Original Q5

0 5 . 6 There are two different processes of cell division in humans.

Describe **three** differences between cell division to form sperm cells compared with cell division to form liver cells.

[3 marks]

1 _____

_____

_____

2 _____

_____

_____

3 _____

_____

_____

18

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 03

June 2023 | 8464/B/2H | Original Q5

0 5 In Vitro Fertilisation (IVF) can be used to treat infertility.

0 5 . 1 Which hormones are given to women having IVF treatment?

[1 mark]

Tick (✓) **one** box.

- FSH and LH ☐
- FSH and oestrogen ☐
- LH and oestrogen ☐

0 5 . 2 Name the target organ of the hormones used for IVF.

[1 mark]

_____

0 5 . 3 Describe why microscopes are needed in the process of IVF.

[1 mark]

_____

_____

Question 5 continues on the next page

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 03 · continued

0 5 . 4 Describe how the hormones given to women during IVF treatment **interact** with other hormones to prepare the body for pregnancy.

[3 marks]

Scientists studied women who had IVF treatment.

Table 1 shows the results.

Table 1

	Number of women
Received IVF treatment	450
Successful IVF treatment	135

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 03 · continued June 2023 | 8464/B/2H | Original Q5

0 5 . 5 Calculate the **simplest** ratio of the number of women who had successful IVF to the number of women who had unsuccessful IVF.

Give the ratio in whole numbers.

[2 marks]

Ratio (whole numbers) = _____ : _____

0 5 . 6 Suggest **one** factor that can affect the probability of a woman having a child as a result of IVF treatment.

[1 mark]

0 5 . 7 Give **two** arguments against the use of IVF treatment.

Do **not** refer to cost or to religion in your answer.

[2 marks]

1 _____

2 _____

11

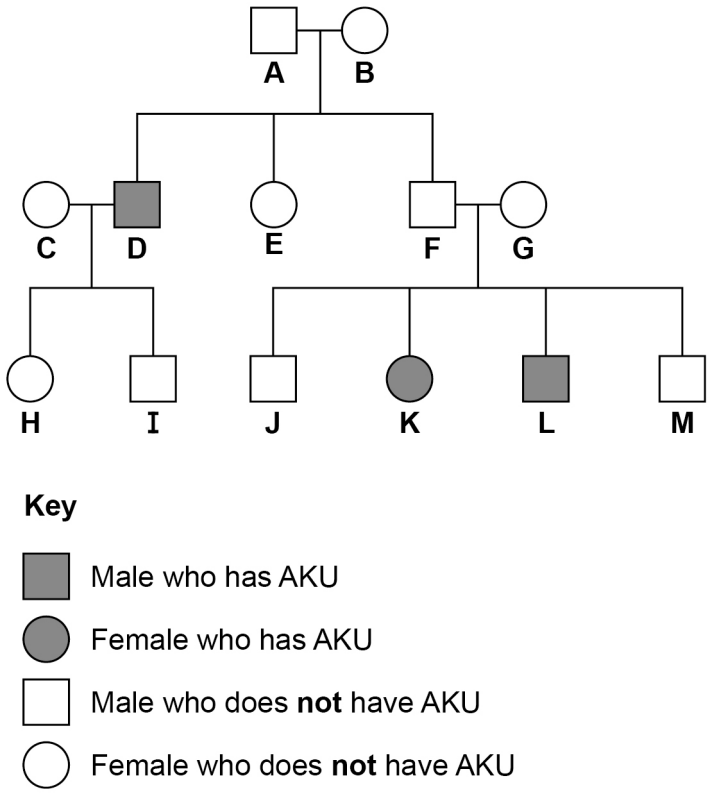
4.5.3.5 The use of hormones to treat infertility (HT only)

Question 04

0 3 AKU is a genetic disorder.

Figure 3 shows the inheritance of AKU in one family.

Figure 3



0 3 . 1 Describe how **Figure 3** shows that the allele for AKU is recessive.

[1 mark]

0 3 . 2 Which person is **definitely** heterozygous for AKU?

[1 mark]

Tick (✓) **one** box.

C ☐ D ☐ E ☐ G ☐

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 04 · continued

0 3 . 3 A female who has AKU and a male who is heterozygous for AKU plan to have a child.

Determine the probability that the child will have AKU.

You should:

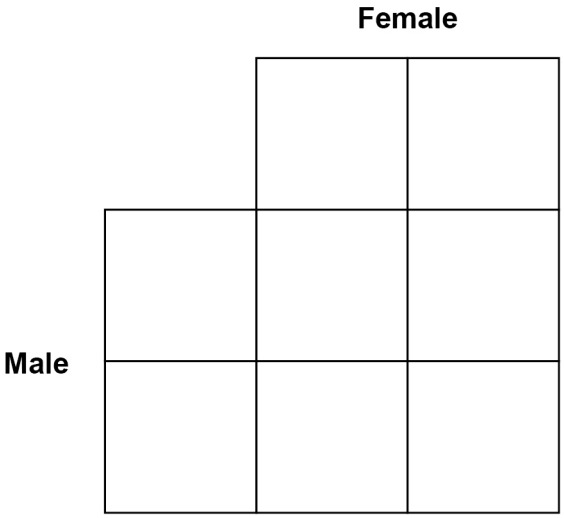
- complete **Figure 4**
- identify the phenotype of each offspring genotype
- use the symbols:

  A = dominant allele

  a = recessive allele.

[5 marks]

Figure 4



Probability that the child will have AKU = _____

Question 3 continues on the next page

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 04 · continued June 2024 | 8464/B/2H | Original Q3

0 3 . 4 A mutation is a change in a gene.

People who have AKU have a mutation that causes the production of a non-functioning enzyme.

Enzymes are proteins.

Suggest how a mutation can result in the production of a non-functioning enzyme.

[2 marks]

0 3 . 5 Some people have In Vitro Fertilisation (IVF) treatment to increase the chance of becoming pregnant.

Describe how the process of IVF can result in pregnancy.

[4 marks]

4.5.3.5 The use of hormones to treat infertility (HT only)

Question 04 · continued

0 3 . 6 Embryos can be screened to detect inherited disorders.

Give **two** arguments **against** embryo screening.

Do **not** refer to religion in your answer.

[2 marks]

1 _____

_____

2 _____

_____

15

Turn over for the next question