

GCSE Combined Science: Trilogy

Worksheet: Human defence systems

TIME 30 min	TOTAL 29 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Human defence systems

NAME	CLASS	DATE
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- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

01

The human body has several ways of stopping pathogens from entering it.

01.1

Which part of the body produces an acid that kills pathogens?

Tick (✓) **one** box.

Nose	☐
Skin	☐
Stomach	☐
Trachea	☐

[1 mark]

01.2

Give **two** ways the skin helps to defend the body against pathogens.

[2 marks]

0 1 . 3

The nose contains hairs and mucus.
How do these help to defend the body?

.....

.....

[1 mark]

0 1 . 4

Name the type of blood cell that helps to destroy pathogens that get into the body.

.....

.....

.....

.....

[1 mark]

0 2

The body has physical, chemical and cellular defences against pathogens.

0 2 . 1

Give **one** example of each of these types of defence: physical, chemical and cellular.

.....

.....

.....

.....

.....

.....

[3 marks]

0 2 . 2

Which defence relies on cilia?

Tick (✓) **one** box.

Skin

☐

Hairs in the nose

☐

The lining of the trachea and bronchi

☐

The stomach

☐

[1 mark]

0 2 . 3

Name the acid produced in the stomach that kills pathogens.

.....

.....

.....

[1 mark]

0 3

White blood cells help to defend the body against pathogens.

0 3 . 1

Give **three** ways that white blood cells defend the body against pathogens.

.....

.....

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.....

.....

[3 marks]

0 3 . 2

What is the function of antitoxins?

.....

.....

[1 mark]

0 3 . 3

Which statement about antibodies is correct?

Tick (✓) **one** box.

Antibodies are made by red blood cells.

☐

Antibodies are specific to one type of antigen.

☐

Antibodies kill viruses by digesting them.

☐

Antibodies are a type of antibiotic.

☐

[1 mark]

0 4

The trachea and bronchi are lined with cells that help to stop pathogens reaching the lungs.

0 4 . 1

Describe how the cells lining the trachea and bronchi stop pathogens reaching the lungs.

.....

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[3 marks]

0 4 . 2

Chemicals in tobacco smoke stop cilia moving.

Explain why smokers are more likely than non-smokers to get chest infections.

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.....

[2 marks]

0 4 . 3

Explain how the stomach helps to defend the body against pathogens.

.....

.....

.....

.....

[2 marks]

0 5

When a pathogen gets into the body, white blood cells try to destroy it.

0 5 . 1

Describe how a white blood cell destroys a pathogen by phagocytosis.

.....

.....

.....

.....

[2 marks]

0 5 . 2

Other white blood cells produce antibodies.

Explain how antibodies help to destroy pathogens.

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[2 marks]

0 5 . 3

Antibodies made against one type of pathogen do not protect the body against a different type of pathogen.
Explain why.

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[2 marks]

0 5 . 4

Some bacteria produce toxins.
Name the substance produced by white blood cells that counteracts toxins.

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.....

.....

.....

[1 mark]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Combined Science: Trilogy · Worksheet: Human defence systems · 29 marks

Question 1 (5 marks)

01.1 [1 mark]

Correct: Stomach

01.2 [2 marks]

Answer: It is a barrier; it produces antimicrobial secretions.

- it is a barrier (to pathogens) (1)
- it produces antimicrobial secretions (that kill pathogens) (1)
- scabs form over cuts to seal them (1)

Any 2 of the points above.

01.3 [1 mark]

- they trap particles that may contain pathogens (1)
-

01.4 [1 mark]

Answer: White blood cells

- white blood cell (1)
-

Question 2 (5 marks)

02.1 [3 marks]

Answer: e.g. skin (physical); stomach acid (chemical); phagocytosis (cellular).

- physical: skin (as a barrier) / hairs and mucus in the nose / cilia and mucus in the trachea and bronchi (1)
 - chemical: hydrochloric acid in the stomach / antimicrobial secretions from the skin (1)
 - cellular: phagocytosis by white blood cells / antibody or antitoxin production by white blood cells (1)
-

02.2 [1 mark]

Correct: The lining of the trachea and bronchi

02.3 [1 mark]

Answer: Hydrochloric acid

- hydrochloric acid (1)
-

Question 3 (5 marks)

03.1 [3 marks]

Answer: Phagocytosis; producing antibodies; producing antitoxins.

- phagocytosis / engulfing and digesting pathogens (1)
 - producing antibodies (1)
 - producing antitoxins (1)
-

03.2 [1 mark]

- to counteract / neutralise toxins (produced by bacteria) (1)
-

03.3 [1 mark]

Correct: Antibodies are specific to one type of antigen.

Question 4 (7 marks)

04.1 [3 marks]

- (some cells) produce mucus (1)
 - mucus traps pathogens / particles (1)
 - cilia move / waft the mucus up to the throat, where it is swallowed (1)
-

04.2 [2 marks]

- mucus (and trapped pathogens) is not moved out of the airways / builds up (1)
 - (so) pathogens reach the lungs / stay in the airways and cause infection (1)
-

04.3 [2 marks]

- the stomach produces (hydrochloric) acid (1)
 - (the acid) kills pathogens (in food / drink / swallowed mucus) (1)
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Question 5 (7 marks)

05.1 [2 marks]

- the white blood cell engulfs / surrounds / ingests the pathogen (1)
 - (and) digests / breaks down the pathogen (with enzymes) (1)
-

05.2 [2 marks]

- antibodies bind / attach to (antigens on) the pathogen (1)
 - (so) the pathogens clump together / are destroyed / are more easily engulfed by white blood cells (1)
-

05.3 [2 marks]

- antibodies are specific (to one antigen) (1)
 - a different pathogen has different antigens, so the antibodies do not bind to it (1)
-

05.4 [1 mark]

Answer: Antitoxins

- antitoxin (1)
-