

GCSE Biology

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.

0 1

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

0 1 . 1

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

Tick (✓) **one** box.

Nose

☐

Skin

☐

Stomach

☐

Trachea

☐

[1 mark]

0 1 . 2

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

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.....

.....

.....

[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.

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.....

.....

[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.

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.....

.....

[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.

.....

.....

.....

.....

[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 Biology · 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)
-