

# 6.3 Defence Against Infectious Disease

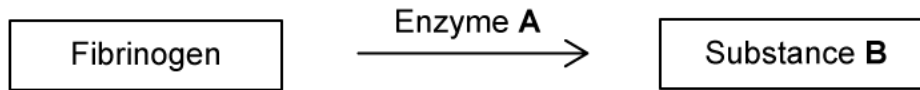
## Question Paper

|            |  |
|------------|--|
| Course     | DP IB Biology                          |
| Section    | 6. Human Physiology                    |
| Topic      | 6.3 Defence Against Infectious Disease |
| Difficulty | Easy                                   |

**Time allowed:** 50  
**Score:** /34  
**Percentage:** /100

### Question 1a

a)  
The following diagram shows part of the blood clotting cascade.



Enzyme **A** acts on fibrinogen.

Identify enzyme **A**.

[1 mark]

[1 mark]

### Question 1b

b)  
Substance **B** is an insoluble protein formed by fibrinogen.

i)  
Identify substance **B**.

[1 mark]

ii)  
State the purpose of substance **B** in the body.

[1 mark]

[2 marks]

### Question 1c

c)  
Blood clotting is essential for the healing of wounds, but can be life-threatening if it occurs in the coronary arteries.

Define the term 'coronary arteries'.

[1 mark]

[1 mark]

### Question 1d

d)

A blood clot in the coronary arteries is called coronary thrombosis.

List **three** risk factors that will increase the chance of developing coronary thrombosis.

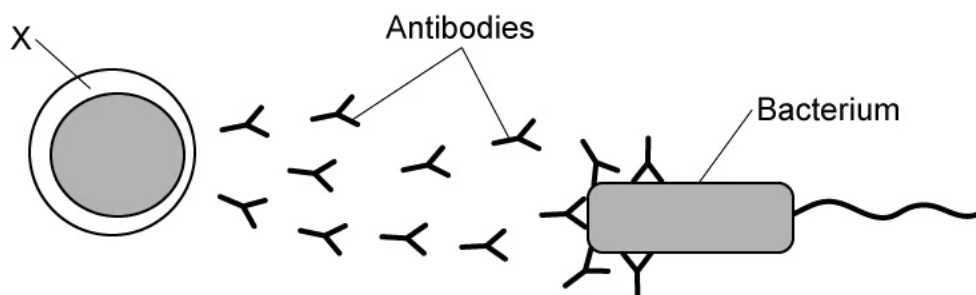
[3 marks]

[3 marks]

### Question 2a

a)

The diagram below shows the production and role of antibodies in the body.



Antibodies are produced by cell X.

Identify cell X.

[1 mark]

[1 mark]

### Question 2b

b)

Antibodies are produced in response to the antigens present on pathogens.

Define the term 'antigen'.

[1 mark]

[1 mark]

### Question 2c

c)

Antibodies aid the body in fighting pathogens in a number of different ways.

State **one** way in which they achieve this.

[1 mark]

[1 mark]

### Question 2d

d)

Antibodies are short-lived, but memory cells remain to provide long term immunity against a second infection by the same type of pathogen.

Describe the secondary response of the memory cells during an infection by the same type of pathogen.

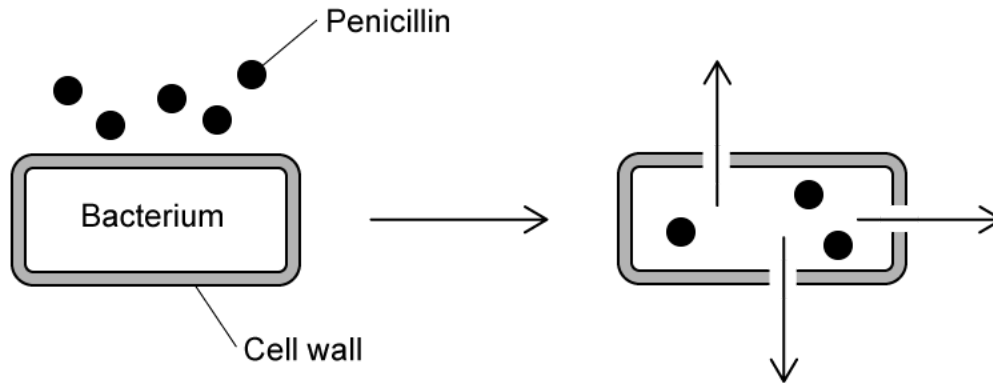
[2 marks]

[2 marks]

### Question 3a

a)

The diagram below shows the action of penicillin on the bacterial cell wall.



Penicillin is an example of an antibiotic.

Define the term 'antibiotic'.

[1 mark]

[1 mark]

### Question 3b

b)

Penicillin is an example of a commonly used antibiotic. It is produced naturally by a fungus (*penicillium*) to kill competing bacteria in their environment.

Based on the information in the diagram in part a), state the way in which penicillin kills bacteria.

[1 mark]

[1 mark]

### Question 3c

c)

Other than the process stated at part b), list **two** processes in prokaryotic cells that antibiotics may target.

[2 marks]

[2 marks]

### Question 3d

d)

Antibiotics are not effective against viruses since they lack the structure and mechanisms of prokaryotic cells. Certain viral diseases are treated with substances known as antivirals.

State the way in which an antiviral works.

[1 mark]

[1 mark]

### Question 4a

a)

Skin is the largest organ of the body and forms part of the primary defence against pathogens.

List **two** ways in which the skin defends the body against pathogens.

[2 marks]

[2 marks]

### Question 4b

b)

Platelets are very important in maintaining the integrity of broken skin as a barrier.

Define the term 'platelet'.

[1 mark]

[1 mark]

### Question 4c

c)

Platelets are essential in the process of blood clotting.

State the role of platelets in response to blood vessel damage.

[1 mark]

[1 mark]

### Question 5a

*One mark is available for clarity of communication throughout this question.*

a)  
Human immunodeficiency virus (HIV) is mainly transmitted by the direct exchange of body fluids.

List **four** ways in which HIV can be transmitted between hosts.

[4 marks]

[4 marks]

### Question 5b

b)  
Once micro-organisms enter the body, white blood cells called phagocytes will provide the next line of defence.

Outline the way in which phagocytes provide defence against micro-organisms.

[4 marks]

[4 marks]

**Question 5c**

c)

An HIV infection will eventually progress into AIDS.

Outline the development of AIDS from an HIV infection.

**[5 marks]****[5 marks]**