

Mark schemes

Q1.

- (a) (physical) barrier
or
 stops pathogens entering (blood / body)
allow named pathogen throughout
allow produces antimicrobial secretions
allow produces oil / sebum / sweat
ignore reference to scabs / clots 1
- (b) $\frac{63}{210}$ 1
- $\frac{3}{10}$
allow 0.3
ignore 30%
if neither mark awarded allow $\frac{210}{63} = \frac{10}{3}$ for 1 mark 1
- (c) (at pH1) 187 (killed)
ignore negative symbol throughout 1
- (at pH5) 31 (killed) 1
- (187 – 31) = 156
 (more bacteria killed)
allow correct subtraction using incorrect calculation at pH1 and/or pH5 1

(d) (the student) calculated the midpoint

1

(between) 23 and 63

OR

any **two** from:

- $\frac{63 - 23}{2} = 20$

- $20 + 23 = 43$

- $63 - 20 = 43$

allow (between values at) pH1 and pH3

allow $\frac{23 + 63}{2} = 43$ for 2 marks

*allow plot data from the table on graph (1) then
read off value for pH2 (1)*

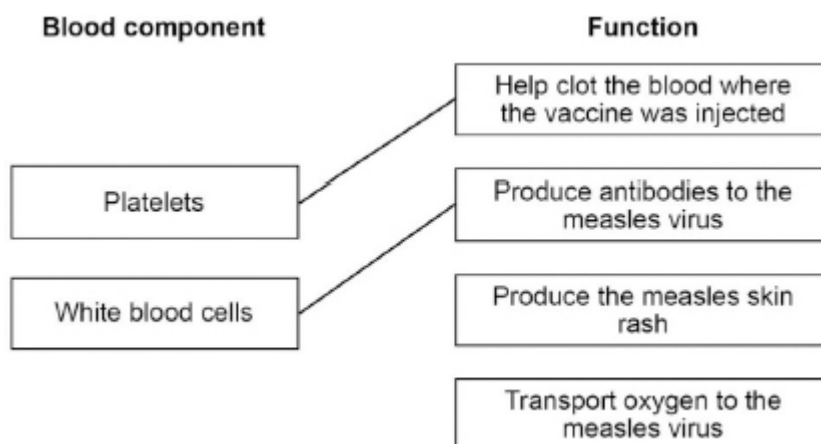
allow other correct methods for up to 2 marks

1

[8]

Q2.

(a)



1

do **not** accept more than one line from a box on the left

1

(b) 1968

allow 1969

1

(c) increases

1

(then) levels off / plateaus

*allow (then) stays the same**allow reaches a maximum**between 1956 and 1968*

1

(then) decreases

*ignore use of numbers of people**if no other mark awarded allow 1 mark for (overall)**decrease*

1

(d) (the percentage) decreased

*allow (the percentage)**decreased then increased**allow (the percentage) changed from 92% to 80%*

1

(e) parents were worried their children would get condition **X**

1

(f) have the research peer reviewed

1

(g) any **one** from:

- (the author was) biased
 - (the author was) influenced by money
 - because the research was not peer reviewed
 - there was not enough evidence
 - small sample size
- ignore (the author) was paid*

1

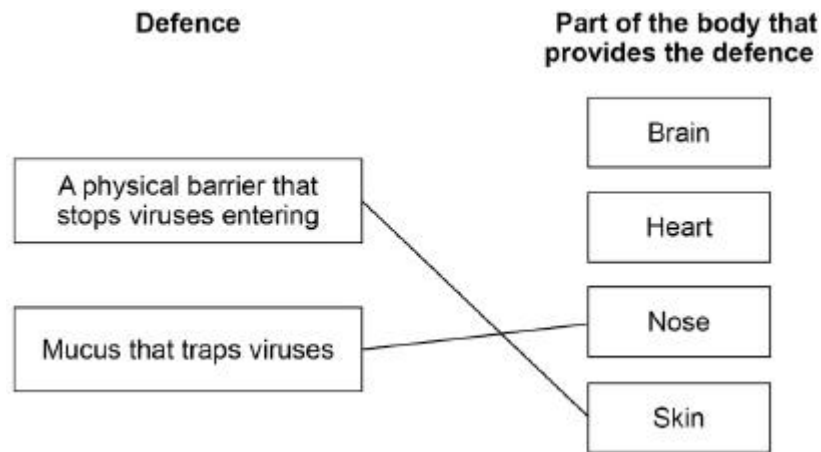
[10]

Q3.

(a) pathogens

1

(b)

do **not** accept more than one line from a box on the left

2

(c) division

1

(d) malignant tumours have cells that can spread to other parts of the body

1

malignant tumours may form secondary tumours

1

(e) (percentage) decreases

1

(f) more females were vaccinated (over time)

*allow males may also be vaccinated**allow more people were vaccinated**allow increased use of (named) barrier methods of contraception**allow more awareness / education (about HPV)*

1

(g) white blood cells

1

(h) antibodies

1

(i) any **one** from:

- people are afraid of side / unknown effects
allow there are side effects
allow people think they cause (named) disease
- religious / cultural objections
ignore religion unqualified ignore moral / ethical objections
- (some people) believe they don't work
- some people think (HPV) vaccine encourages sexual activity
ignore pain of injection

Q4.

- (a) vector 1
- (b) any **two** from:
- (it has) mitochondria
 - (it has a) nucleus
if neither mark awarded, allow 1 mark for protist has membrane-bound structures
allow it does not have a loop of DNA
 - (it has) no plasmids
allow other appropriate features
*do **not** accept (it has) cytoplasm*
*do **not** accept (it has) a (cell) membrane*
*do **not** accept it has no cell wall*
- 2
- (c) Salmonella 1
- (d) only one parent is involved 1
- (e) 14 1
- (f) decreased haemoglobin 1
- (g) $\frac{210\ 000\ 000}{2}$
- or**
- 105 000 000
allow alternative route
allow correct conversion to standard form at any stage
 $\frac{210\ \text{million}}{2}$
allow 2
or
 105 million
- 1

105 000 000 × 3		
<i>allow 105 million × 3</i>		1
315 000 000		
<i>allow 315 million</i>		1
3.15 × 10 ⁸		1
(h) any two from:		
• wear long(er) sleeves / clothes		
<i>allow reduce bare skin exposure</i>		
• use insect repellent or insecticides		
<i>allow insect repellent methods such as citronella candles</i>		
• don't go out in the evening		
<i>allow close doors / windows in the evening</i>		
• avoid going to countries / places with malaria / mosquitos		
• destroy breeding grounds		
<i>allow methods of destroying breeding grounds such as drain water holes</i>		
• release sterile male mosquitos		
<i>ignore vaccination / anti-malarial drugs</i>		2
<i>allow other correct suggestions</i>		
(i) percentage / chance (of getting malaria) decreases (with age)		
<i>do not accept percentage / chance of having disorder S</i>		
<i>decreases with age</i>		1
correct use of data such as two pairs of data from the table		
<i>allow use of processed data</i>		1
		[15]

Q5.

(a) sexual intercourse

1

(b) increased (at first)

1

(then) decreased

*ignore numbers unqualified**do **not** accept an implication of an overall increase**if no other mark awarded allow (overall) decrease
for **1** mark*

1

(c) better education on how to prevent the spread of HIV

1

(d) (C) → E → A → B → D

*allow **1** mark for E → A link**allow **1** mark for A → B link**allow **1** mark for B → D link**if no other mark awarded allow **1** mark for an
answer of**(C) → E → B → A → D*

3

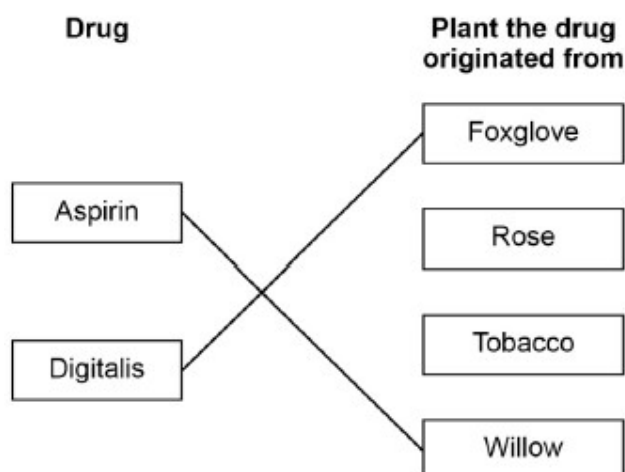
(e) testing on healthy volunteers

1

(f) drugs that destroy viruses also damage body tissues

1

(g)

*do **not** accept more than one line from a box on the
left*

2