

MARK SCHEME

GCSE

BIOLOGY

AQA - COMBINED SCIENCE

B 3 - TEST 2

INFECTION AND RESPONSE

Beginner

Mark schemes

1.

blood clots to seal cuts;
kills microbes which enter

each for 1 mark
(allow higher level answers)

[2]

2.

(a) antibiotics do not kill viruses

allow antibiotics only kill bacteria
allow flu is not caused by a bacterium

or

antibiotics are not effective against viruses

allow antibiotics cannot reach viruses inside cells

1

(b) Inactive viruses

1

(c) Conclusion:

people 65 years and older had the highest percentage vaccinated.

ignore references to figures unless qualified

1

Reason:

more worried about becoming ill

or

had more time to go to the doctor.

OR

Conclusion:

children aged 3-years had the lowest percentage vaccinated.

Reason:

parents didn't have time to take them to the doctor

or

they had been vaccinated when 2-years old.

1

[4]

3.

(a) (i) any **one** from:

- age
- gender
- body mass
- number in group / 50
allow number of children
- high body temperature
allow starting temperature
allow dose / amount of drug given

1

(ii) any **one** from:

- tablet that does not contain a drug / anything
allow sugar pill
*do **not** allow a different drug*
- fake drug

1

(b) (i) 38.2 (°C)

1

(ii) ibuprofen

no mark for drug
no marks if wrong drug selected

any **two** from:

- reduced body temperature fast(er)
allow acts fast(er)
- maintained temperature in normal range / around 37 °C (longer / for several hours)
- paracetamol did not reduce temperature to normal / 37 °C
accept ibuprofen did reduce temperature to normal / 37 °C
- ibuprofen given less frequently
allow less drug needed
ignore cheaper unless qualified

2

[5]

4.

(a) any **two** from:

ignore eating disorder
ignore cancer

- arthritis
accept worn joints
- diabetes
accept high blood sugar
- high blood pressure
ignore cholesterol
- heart disease / heart condition / heart attack / blood vessel disease
allow blood clots / strokes

2

- (b) (i) $\frac{1}{4}$ **or** 0.25 **or** 25%
correct answer gains 2 marks
if answer incorrect, evidence of $1500 \div 6000$ gains 1 mark
25 without % gains 1 mark 2
- (ii) majority / most / high proportion of people in trial lost mass / weight
ignore good results / it worked 1

[5]

5.

- (a) (i) 12
*correct answer with **or** without working*
*if answer incorrect evidence of (number of deaths) $\times 6$ **or** 2 seen*
gains 1 mark 2

- (ii) (ward 2)
 more deaths / infections on ward 1
or
 less deaths / infections on ward 2 1

- (b) (i) **both** bars correctly plotted
*ie plots in spaces between 2.8 and 3.2 **and** 0.8 and 1.2*
ignore width and shading 1
- (ii) less deaths / infections 1
- (iii) bacteria / germs / microbes / infection killed / washed off
accept less infections passed on 1

[6]

6.

- (a) (i) lives inside cells 1
- (ii) inactive 1
- (iii) antibodies 1

- (b) (i) 1950 1
- (ii) 8 (years) 1
- (iii) any **one** from: eg
- disease could be reintroduced (from abroad)
disease might come back insufficient
 - disease would spread if it came back
 - protection on holiday abroad
 - high proportion of immune people needed to prevent epidemic
- 1

[6]

7.

- (a) (i) 4 / four (years) 1
- (ii) any **one** from:
- animals
allow suitable examples eg rats
*do **not** allow humans / plants*
 - (living) cells
allow human cells
*do **not** allow plant cells*
 - (living) tissues
allow human tissues
*do **not** allow plant tissues*
- 1

- (b) (i) 9 (years)
allow 1 mark for 13 – 4
or
2 + 3 + 4 2
- (ii) see if the drug has side effects 1
- (iii) neither the volunteers nor the doctors 1

[6]

8.	(a) (i) 64	1
	(ii) 36 <i>allow e.c.f from (i) i.e. 100 – answer given in (a)(i)</i>	1
	(iii) any one from: <ul style="list-style-type: none"> • only considers 16-year-olds <i>ignore lack of evidence</i> <i>allow does not refer to all ages</i> • only about some / 5 countries <i>allow does not refer to all countries.</i> 	1
	(b) the more exercise done the healthier a person is <i>allow the more exercise done the higher the health rating</i> <i>allow the less exercise done the lower the health rating</i>	1
	(c) having a high cholesterol level	1
	(d) (i) antibodies	1
	(ii) antibiotics	1
		[7]
9.	(a) a disease that can be spread from one person to another	1
	(b) gonorrhoea	1
	(c) antibiotics	1
	(d) painkillers <i>allow aspirin, paracetamol, ibuprofen and other correct brand names</i>	1

(e)

Level 2: Scientifically relevant facts, events or processes are identified and given in detail to form an accurate account.	3-4
Level 1: Facts, events or processes are identified and simply stated but their relevance is not clear.	1-2
No relevant content	0
Indicative content <ul style="list-style-type: none">• skin stops the bacterium (entering the body)• blood clots to stop bacteria entering (through cuts)• stomach acid will kill the bacterium (if it is in food)• nose / trachea have mucus to trap the (tuberculosis) bacteria• nose / trachea have cilia / hair to move mucus out• white blood cells destroy the bacteria if infected• by phagocytosis• by antibodies• by antitoxins	

4

[8]

10.

(a) ingest pathogens

1

produce antibodies

1

produce antitoxins

1

deduct 1 mark for each extra box ticked

(b) are not killed / affected (by antibiotic)

allow antibiotic does not work / does not cure

allow bacteria immune (to antibiotic)

allow infection not killed

ignore bacteria mutated

1

(c) (i) (antibiotic) Y

1

(ii) 8

allow 54 – 46 for 1 mark

2

(iii) any **two** from:

- overuse / widespread use/ over prescription
OWTTE
- inappropriate use / use for eg sore throats / viral infections
- mutation / change to DNA (in bacteria)
- natural selection /description
ignore people not finishing course of antibiotics
ignore wrong antibiotic given

2

[9]

11.

(a) any **two** adaptations with linked descriptions from:

- many alveoli to provide a large surface area
- good blood supply to maintain steep diffusion / concentration gradient
- thin walls so gases do not have far to diffuse / travel
- well ventilated to maintain steep diffusion / concentration gradient
1 mark for adaptation and 1 mark for linked description
allow to collect oxygen or to bring carbon dioxide to lungs

4

(b) an allergy

1

(c) any **one** from:

- narrow(er) / small(er) (air) passages / bronchioles
- less air / oxygen can pass through

1

(d) 3.3 (dm³)

1

(e) any **one** from:

- fake drug
- inactive form of drug

1

(f) neither the volunteers nor the scientists

1

(g) to avoid / reduce bias

1

(h) any **two** from:

- drug only works for severe asthma attacks
or
drug only increased lung capacity in severe asthma attacks
- drug had little effect **or** slight reduction in healthy people
- drug had no effect in mild asthma attacks
- drug does not alleviate the problem entirely

2

[12]