

Communicable Diseases

Mark Scheme 1

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Biology
Exam Board	AQA
Topic	4.3 Infection and Response
Sub-Topic	Communicable Diseases
Difficulty Level	Gold Level
Booklet	Mark Scheme 1

Time Allowed: 54 minutes

Score: /53

Percentage: /100

Grade Boundaries:

M1.(a) any **one** from:

- not all deaths recorded
- not all causes of deaths recorded
allow cause may not be known

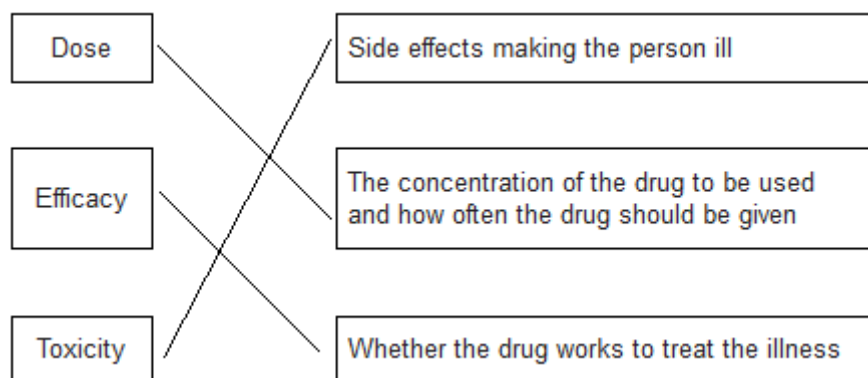
1

(b) antibiotics do not kill viruses

allow antibiotics only kill bacteria

1

(c)



all correct for 2 marks

1 or 2 correct for 1 mark

2

(d) any **one** from:

- to prevent false claims
- to make sure the conclusions are correct / valid
- to avoid bias

1

(e) some people would be immune to EVD

allow those vaccinated would not contract the disease

1

if less people (in a population) have EVD less chance of it being passed on

1

(f) **Level 3 (5–6 marks):**

A detailed and coherent evaluation is provided which considers a range of arguments for and against the use of unlicensed drugs and comes to a conclusion consistent with the reasoning.

Level 2 (3–4 marks):

An attempt to give arguments for and against the use of unlicensed drugs is made. The logic may be inconsistent at times but builds towards a coherent argument.

Level 1 (1–2 marks):

Discrete relevant points made. The logic may be unclear and the conclusion, if present, may not be consistent with the reasoning.

0 marks:

No relevant content

Indicative content

pros

- might save some lives
- vaccine could reduce chance of future outbreaks
- patient made aware of risk and agreed to use of drug
- sharing of results could speed up development of effective vaccines / drugs
- used mainly for health workers who were risking their lives to help

cons

- could be dangerous
- or**
- vaccine could harm a healthy person
 - goes against legislation / laws governing drug development
 - might set a precedent for other drugs not to be fully tested
 - unfair as not available to the African people

a justified conclusion

6

[13]

M2.(a) (i) any **one** from:

- (produce) toxins / poisons
- (cause) damage to cells
kill / destroy cells

allow kills white blood cells

1

(ii) produce antitoxins

1

engulf / ingest / digest pathogens / viruses / bacteria / microorganisms

accept phagocytosis or description

ignore eat / consume / absorb for engulf

ignore references to memory cells

1

(b) (i) dead / inactive / weakened

accept idea of antigen / protein

1

(measles) pathogen / virus

ignore bacteria

1

(ii) (after infection)

accept converse if clearly referring to before vaccination

1

rise begins sooner / less lag time

steeper / faster rise (in number)

1

longer lasting **or** doesn't drop so quickly

idea of staying high for longer

ignore reference to higher starting point

1

- (iii) antibodies are specific or needs different antibodies
*accept antigens are different **or** white blood cells do not recognise virus*

1

- (c) reduces spread of infection / less likely to get an epidemic
accept idea of eradicating measles

1

[10]

- M3.(a)** (i) viruses live inside cells

1

viruses inaccessible to antibiotic
allow drug / antibiotic (if used)
would (have to) kill cell

1

- (ii) any **two** from eg
- non-resistant strains killed (by antibiotics)
 - so less competition
 - overuse of antibiotics / antibiotics prescribed for mild infections
if no marks gained allow one mark for 'people do not finish course of antibiotics'

2

- (b) (stimulate) antibody production
ignore antitoxin

1

(by) white cells

1

rapidly produce antibody on re-infection
ignore antibodies remain in blood

1

[7]

M4. (a) (i) any **one** from:

- cells
- tissues
- (live) animals / named
allow mammals

1

(ii) any **three** from:

(to test for)

- toxicity / check not poisonous / not harmful
allow side-effect
allow converse
- interaction with other drugs
- efficacy **or** to see if they work **or** check if they treat the disease
allow converse
- dosage **or** how much is needed

3

(b) **argued evaluation**

*comparison can be written anywhere in evaluation allow use of 'only' for implied comparison for each point eg **only** statins damage muscles / kidneys / organs*

any **six** from:

- statin can damage / muscles / kidneys / organs but cholesterol blockers don't
ignore liver
if neither of the first 2 points are given accept for 1 mark
- statins can cause death but cholesterol blockers don't
*statins are more dangerous than cholesterol blockers **or***

statins have more side effects

- cholesterol blockers can interfere with action of other drugs but statins don't
- statins are for a life time but cholesterol blockers are not
- statins (might) reduce cholesterol to zero but cholesterol blockers only reduce it **or** statins reduce cholesterol more
*allow statins (might) stop membrane / hormone production
but cholesterol blockers don't*
- statins better for people with inherited high cholesterol
- cholesterol blockers better for people with dietary cholesterol problems
- taking/using statins/cholesterol blockers is better than dying from heart attack or build up of fat in blood vessels or reduced blood flow

6

[10]

- M5.** (a) (i) kills / gets rid of / reduces methane bacteria
*allow kills / gets rid of / reduces bad bacteria
ignore acts like antibiotic*

1

- (ii) less food converted to methane
*allow can keep more cattle without further environmental
damage
ignore energy*

1

more growth / meat / muscle / milk produced / more profit / fatter animals
ignore references to bacteria and disease

1

- (b) absorbs energy / heat radiated by Earth

allow absorbs / traps energy / heat / from Earth

*do **not** allow absorbs energy / heat from Sun*

1

some energy / heat reradiated

ignore reflected

*do **not** allow reradiates energy / heat from Sun*

1

leading to global warming / enhanced greenhouse effect

accept effects of global warming eg melting ice caps

accept methane is a greenhouse gas

ignore references to ozone

1

[6]

- M6.** (a) dead or inactive or weak form of pathogen / bacterium / virus / microorganism introduced

ignore disease / germ

1

(stimulates) white cells / lymphocytes / leucocytes

accept B and T cells

ignore phagocytes

1

to produce antibodies

ignore antitoxins / antigens

1

antibodies made quickly on re-infection / idea of memory cells

ignore already has antibodies
ignore 'body remembers'

1

- (b) (i) alters / causes chemical processes / body chemistry
ignore craving / withdrawal symptoms

1

(ii) any **two** from:

- combined molecule / vaccine stimulates antibody production
- if nicotine taken, antibodies bind to nicotine molecules
ignore destroys nicotine
- making them too large to get to brain / making them ineffective
allow prevents nicotine entering brain

2

[7]