

- M1.** (a) stomach and pancreas correctly labelled 1
- (b) bacteria not killed (by stomach acid / HCl) and so they damage mucus lining 1
- so acid / HCl damages stomach tissue / causes an ulcer
allow bacteria infect stomach tissue 1
- (c) if the cancer is malignant 1
- (cancer) cells can spread to other organs 1
- via the blood forming a secondary tumour
do not award marking points 2 or 3 without marking point 1 1
- (d) add Biuret reagent to food sample
allow sodium / potassium hydroxide (solution) + copper sulfate(solution) 1
- mauve / purple colour shows protein present 1
- (e) damaged villi reduce surface area for absorption (of food molecules) 1

(therefore) fewer amino acids and glucose absorbed

1

with less glucose transfer of energy from respiration is reduced

1

and fewer amino acids available to build new proteins

1

[12]

M2. (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]

- M3.** (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]

- M4.** (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]

M5. (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 2

- 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'

(b) (stimulate) antibody production 1
ignore antitoxin

(by) white cells 1

rapidly produce antibody on re-infection 1
ignore antibodies remain in blood

[7]

M6. (a) vector 1

(b) any **three** from:
• destroy the snails
• isolate infected dogs
• treat infected dogs
allow vaccination
• educate owners about picking up dog faeces 3

(c) stop mosquitoes breeding
allow correct description 1

use mosquito nets
allow use of insect repellent 1

[6]

- M7.** (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]