M1. (a) stomach and pancreas correctly labelled

1

(b) bacteria not killed (by stomach acid / HCl) and so they damage mucus lining

1

so <u>acid / HCl</u> 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 <u>chemical processes</u> / 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

- 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

<u>rapidly</u> produce antibody on re-infection

ignore antibodies remain in blood

1

[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]