

- 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) any **two** from:

- diet

ignore exercise

accept any reasonable reference to diet
*do **not** accept salt / blood pressure*
ignore age / gender / HDL / LDL

- heredity / genes / genetic makeup
- reference to cholesterol production by liver

2

(b) (i) Blood cholesterol concentration is only one of several factors affecting death from all causes

1

(ii) 170 – 210
accept 210 - 170

1

[4]

M3. (a) (substance / chemical) that affects body chemistry / chemical reactions in the body

1

(b) statin / aspirin / neither recommended

no mark, may be implied. If no recommendation or implication, max 4 marks

answers should be comparative

any **five** from:

- argued evaluation in favour of aspirin or statin or neither

answers could include reference to

*accept converse for statins / aspirin but **not** as advantage of one **and** disadvantage of other*

for statins:

- more people in studies
- so data / findings more repeatable
accept reliable for repeatable
ignore accurate / precise
- reduces cholesterol but aspirin doesn't
allow reduces cholesterol but no evidence about aspirin
- aspirin (may) causes bleeding / poor clotting but statins do not
allow aspirin causes bleeding / poor clotting but no evidence about statins
- smaller (total) percentage suffer side-effects
- monitored by doctor, aspirins not

for aspirin:

- cheaper
- can be bought over the counter rather than prescribed
- statins cause serious damage / muscle damage / kidney failure but aspirins do not

similarities:

- both have similar effect on reducing (non-fatal) heart attacks
- incidence of side-effects low in both
allow (for aspirin) higher reduction of risk of heart attack

M4. (a) (concentration high) in the hepatic portal vein is blood with glucose absorbed from the intestine

1

concentration is lower in the hepatic vein because insulin

1

(has caused) glucose to be converted into glycogen

1

or

allows glucose into liver cells

- (b) (i) (after 6 hours) most of the glucose has been absorbed from the intestine
or from food into the blood

1

- (ii) because glucagon (made in the pancreas) causes
if biological terms incorrectly spelt they must be phonetically accurate
*do **not** accept glucagon made / produced by the liver*

1

glycogen to be converted into glucose

1

glucose released into blood

allow the liver maintains the correct / constant level of glucose in the blood

1

[7]

M5.(a) stomach is acidic / has low pH

allow any pH below 7

ignore stomach is not alkaline

1

lactase works best / well in alkali / high pH / neutral / non-acidic conditions
allow any pH of 7 and above
accept works slowly in acid conditions
*allow figures from table with a **comparison***
ignore reference to temperature

1

(b) any **three** from:

- (below 40(°C)) increase in temperature increases rate / speed of reaction
- reference to molecules moving faster / colliding faster / harder / more collisions
- enzyme optimum / works best at 40°C
allow value(s) in range 36 – 44
ignore body temperature unless qualified
- high temperatures (above 40°C) / 45°C / 50°C enzyme denatured
*allow synonyms for denaturation, but do **not** allow 'killed'*
*denaturation at high and low temperature does **not** gain this mark*
ignore references to time / pH

3

(c) any **two** from:

- acid neutralised or conditions made neutral / alkali
accept bile is alkaline
- (allow) emulsification / greater surface area (of lipid / fat)
allow description of emulsification eg fat broken down / broken up into droplets
*do **not** accept idea of chemical breakdown*
- lipase / enzymes (in small intestine) work more effectively / better
allow better for enzymes
ignore reference to other named enzymes

2

[7]

M6. (a) (i) mitochondrion / mitochondria
must be phonetically correct

(ii) carbon dioxide / CO₂

	1
water / H ₂ O	1
<i>in either order</i>	
<i>accept CO₂ but not CO²</i>	
<i>accept H₂O or HOH but not H²O</i>	
 (iii) diffusion	 1
high to low concentration	
<i>allow down a concentration gradient</i>	1
through (cell) membrane or through cytoplasm	
<i>do not accept cell wall</i>	1
 (b) ribosomes make proteins / enzymes	 1
 using amino acids	 1
 part A / mitochondria provide the energy for the process	
<i>allow ATP</i>	
<i>do not accept produce or make energy</i>	1

[9]

M7.A + B most effective (treatment)

ignore descriptions of LDL levels

1

D is (the most) effective (treatment)

D is the best single (treatment)

1

neither A nor B (alone) are effective

allow increase risk of heart disease instead of not effective

1

can't tell if C is effective **ORA + C** is not effective

1

[4]

M8. (a) (i) diaphragm

accept phonetic spelling

1

(ii) (because) the volume (inside the jar) increases

*maximum **two** marks if no reference to correct part of model*

1

(causing) the pressure to decrease

1

(and) air enters the balloon

allow oxygen

1

(b) (i) (so it moves by) diffusion

*do **not** allow osmosis or active transport*

1

from a high concentration (of oxygen) to a low concentration

allow down its / oxygen concentration gradient from the air

***or** to the blood*

or

(because) there is a high(er) concentration (of oxygen) in the air **or** there is a low(er) concentration of oxygen in the blood

ignore reference to amount of oxygen

1

(ii) many gill filaments

must be in the correct pairs to gain 2 marks

1

(give a) large surface / area

*do **not** allow surface area to volume ratio*

or

thin

(so) short diffusion pathway

or

good blood supply

(to) maintain the concentration gradient

or

water continually flows over them / continually ventilated

(to) maintain the concentration gradient

1

[8]