M1. (a) to show the experiment was more repeatable

1

(b) (circle) 0.0 at 20 °C

1

(c) ignored it / did not use it

ignore repeated it

1

(d) increases the rate of reaction up to 30 °C

1

(e) 60 °C

1

(f) do the experiment at 30 °C, 35 °C and 40 °C

1

(g) **Level 2 (3–4 marks):**
A detailed and coherent plan covering all the major steps is provided. The method is set
out logically taking into account control variable and appropriate measurements. The plan could be repeated by another person to determine the effect of pH on breakdown of starch by amylase.

Level 1 (1–2 marks):
Simple statements relating to relevant apparatus or steps are made but they may not
be in a logical order. The plan would not allow another person to determine the effect of
pH on breakdown of starch by amylase.

0 marks:
No relevant content.

Indicative content

- range of at least 3 pH values / use of buffer solutions
- control variables / keep amount or concentration of starch and amylase the same
- keep temperature the same using water bath / electric heater
- use iodine test to make qualitative observations
- observe colour changes at different temperatures
- do repeats at each pH

4

[10]

M2. (a) (Type 2) diabetes / heart disease / deficiency disease / named

allow a relevant health problem

*ignore obesity **or** over / under weight / anorexia*

1

(b) (i) provides more (energy / sugar) than is used

idea of sugar being high in / having a lot of energy eg contains a lot of calories

*allow it is turned to fat **or** stored (as fat)*

1

(ii) fat

1

(c) (i) C

1

(ii) no health problems

allow as others (may) have (possible) health problems

ignore reference to sweetness

1

(iii) idea of informed choice

eg in case you have health problems / allergies

allow legal requirement

ignore diabetes

1

[6]

M3.(a) (i) A = (cell) membrane

1

B = cytoplasm

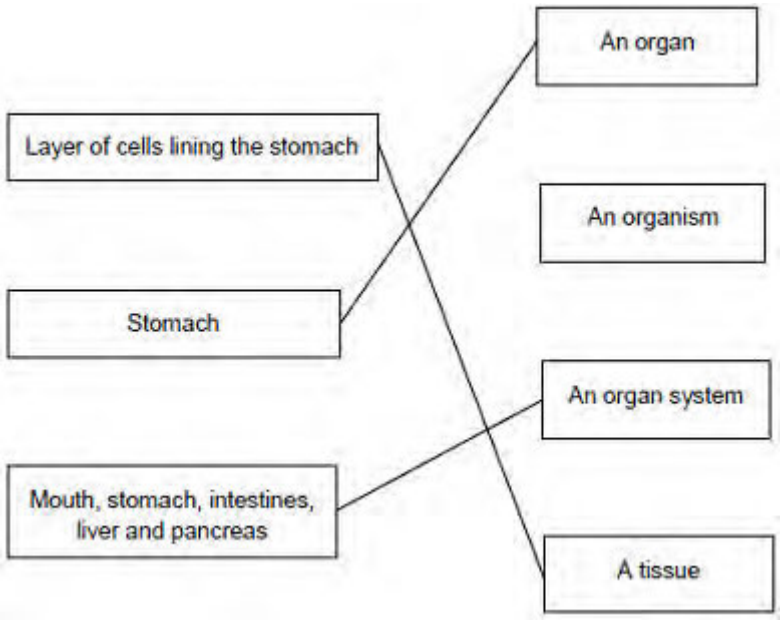
*do **not** accept cytoplast*

1

(ii) To control the activities of the cell

1

(b)

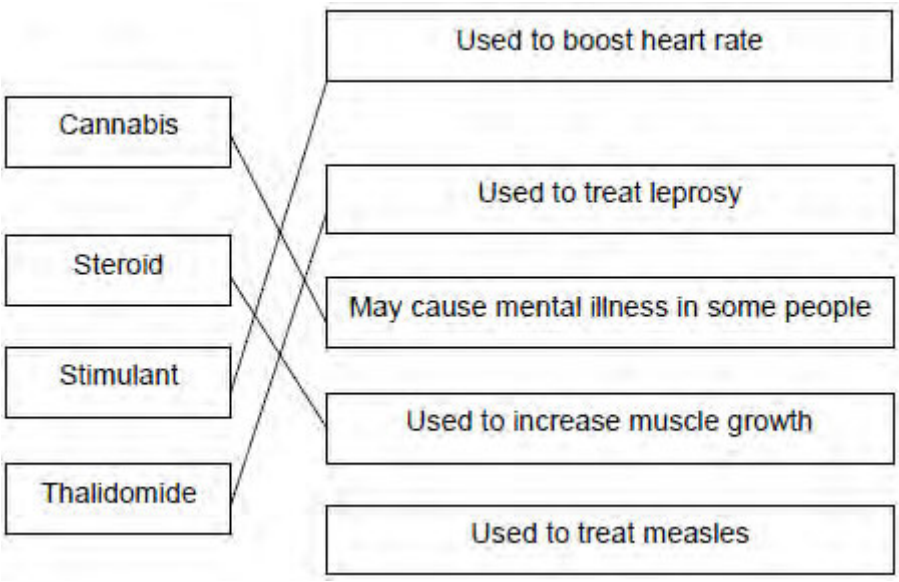


extra lines cancel

3

[6]

M4.(a)



extra line from any drug cancels that mark

4

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

- (live) animals
  accept named examples, eg mice
  ignore people / volunteers
- cells
- tissues
  *do **not** allow plants*

1

(ii) to check that the drug works

1

to find the best dose to use

1

(iii) only scientists at the drug company

1

(c) (i) 420

1

(ii) statin(s)

1

(iii) any **one** from:

- side effects
  allow cost
- other medication
  allow patient choice
- other (medical) conditions
  *allow family history **or** age*

1

[11]

M5.(a) (i) alveoli / alveolus

allow air sacs

allow phonetic spelling

1

(ii) any **one** from:

- protection (of lungs / heart)
- help you breathe / inflate lungs.

1

(b) (i) diffusion

1

(ii) capillaries

1

(iii) any **two** from:

- (have many) alveoli

  allow air sacs
- large surface / area
- thin (exchange) surface **or** short diffusion pathway

  accept only one / two cell(s) thick
- good blood supply / many capillaries

  allow (kept) ventilated or maintained concentration gradient.

2

[6]

M6.(a) (i) a catalyst

1

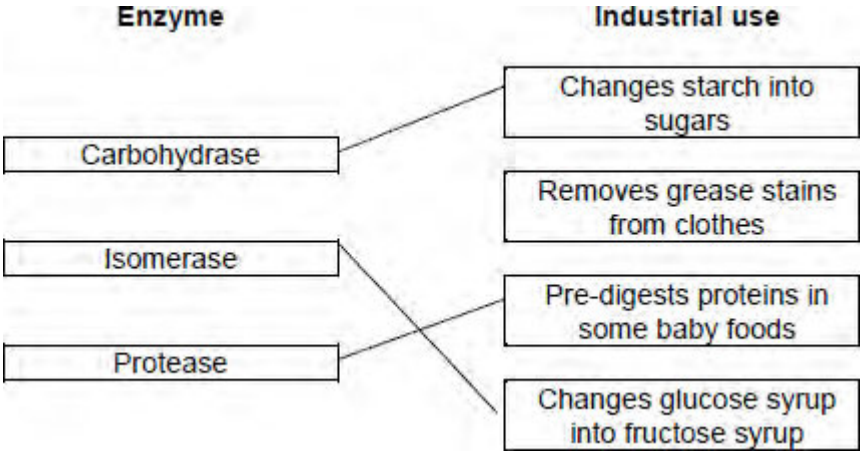
(ii) protein

1

(iii) salivary glands

1

(b)



extra lines from any enzyme cancels that mark

3

[6]

M7. (a) 300

1

(b) suitable scale on *y*-axis

1

label *y*-axis

1

4 bars drawn correctly

*allow **1** mark for 3 correct bars*

2

(c) increases from 50 to 500

1

then decreases from 500 to 0

1

(d) carbohydrates broken down / digested into sugars

1

broken down by carbohydrase or amylase

1

(e) absorption of glucose

1

into blood

1

by active transport

allow diffusion

1

[12]