

Mark schemes - out of 35

21 = grade 5

17 = grade 4

13 = grade 3

8 = grade 2

5 = grade 1

Q1.

(a) C

1

(b) sugars

1

(c) small intestine


1

(d) pH of the amylase solution

1

(e)  black

1

 orange

1

(f) 3(.0 minutes)

allow any value in the range 2.51 to 3.0 (minutes)
*do **not** accept 2.5 (minutes)*

1

(g) pH 7

1

[8]

Q2.

(a) A

1

(b) left ventricle

1

(c) coronary artery

1

(d) vein

1

(e) to stop blood flowing in the wrong direction

allow to stop blood flowing backwards

allow to stop backflow (of blood)
allow to keep blood flowing in the correct direction

1

- (f) walls that are one cell thick
allow thin walls
ignore thin unqualified
*do **not** accept references to cell walls*

1

(so) there is a short diffusion distance
allow (so) substances can move (quickly) between blood and cells / tissues
allow (so) diffusion / movement can happen faster
allow (so) there is a short distance for substances to move

OR

large surface area (to volume ratio) (1)

for exchange of substances (1)

allow (so) more substances can diffuse / move at the same time (1)

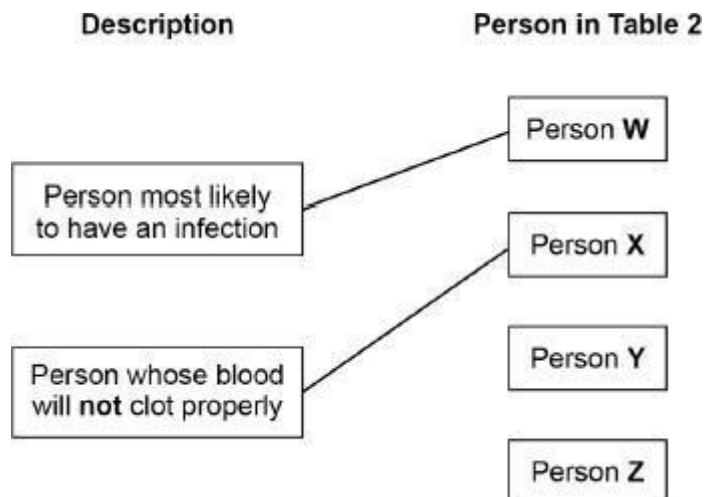
allow (very) narrow (1)
(so) are close to cells (1)

1

- (g) 5×10^6

1

- (h)



*do **not** accept more than one line from a box on the left*

2

- (i) more oxygen (can be transported / carried)
allow red blood cells carry oxygen

(oxygen) is needed for (aerobic) respiration
allow (so) less anaerobic respiration

(so) more energy can be transferred / released
*do **not** accept energy is made / produced / created*

[13]

Q3.

(a) (A) trachea

(B) bronchus

must be in this order

(b) D

(c) any **two** from:

- many alveoli
- large surface area
- short diffusion distance / *short distance for gas to travel across*
- wall of alveolus only one cell thick / *thin*
- wall of blood capillaries only one cell thick / *thin (wall of) blood capillary*
- good blood supply
- well ventilated

Q4.

(a) soil /ground

ignore air rain roots

(b) transpiration

(c) 510.7 - 9(.0)

or

503.5 - 1.8

501.7 (grams)

(d) 1.8 grams/hour

(e) straight line drawn from 0,0 to 5 hours

ignore any extrapolations

at a less steep gradient below the line on **Figure 2**

1

(f) any **one** from:

- increase air movement
- increase light intensity
- decrease humidity

ignore references to temperature

ignore references to the bag

allow descriptions of how changes could be achieved experimentally eg use a fan

1

[8]

Q5.

(a) cancer

1

(b) any **one** from:

ignore cancer

- (coronary) heart disease / CHD / cardiovascular disease

allow atherosclerosis

ignore heart attack

- diabetes

allow high blood pressure

allow stroke / asthma / depression / gallstones / (osteo)arthritis

allow sleep apnoea

1

(c) any **one** from:

- taxes on high energy / fat / sugar foods

allow increase the price on high energy / fat / sugar foods

- education (about diet and health)
- (government) advertising
- restrict media advertising of high energy / fat / sugar foods
- information on food labels
- help / advice / groups for obese people via the NHS
- calorie information on restaurant / takeaway menus
- regulation of supermarket offers on high sugar / fat / energy foods
- regulation of type of foods for sale near checkouts
- exercise campaigns

1

(d) $BMI = \frac{69}{1.64^2}$

allow BMI = $\frac{69}{1.64 \times 1.64}$

allow BMI = $\frac{69}{2.6896}$

1

BMI = 25.6(5437....)
allow 26 or 25.7

1

(the person's BMI category is) overweight
must be consistent with their calculated BMI value

1

- (e) any **one** from:
- women will gain mass / weight (during pregnancy)
allow BMI (of woman) will increase (during pregnancy)
 - (developing) baby will increase mass / weight of woman

1

- (f) any **two** from:
- smokers had babies with lower birth mass
 - women / smokers / non-smokers with higher BMI had heavier babies
allow obese women have the heaviest / heavier babies
allow underweight women have the lightest / lighter babies
 - smoking had the greatest effect on birth mass in underweight women
 - smoking had the least effect on birth mass in overweight women
 - smoking had less effect on birth mass in overweight and obese women (than in underweight and healthy weight women)
allow there is only a 365 g difference between the smallest and largest babies
- statements must be comparative*
allow converse statements
allow weight for mass

2

- (g) coughs / sneezes (spread virus in droplets)
allow breathing out (spreads virus in droplets)

1

droplets / virus are inhaled
allow droplets / virus are breathed in
ignore contact with infected person unqualified
assume 'it' refers to the virus
*allow touch a contaminated surface **and** then touch your mouth / nose / eyes for 1 mark*
if no other marks awarded allow kissing for 1 mark only

1

- (h) $\frac{17}{100} \times 67\,961\,900$
allow 0.17 x 67 961 900

1

= 11 553 523

allow 11 553 500

1

(i) any **one** from:

- dry feet thoroughly (after washing)
allow use foot powder
ignore keep feet dry
ignore wash feet regularly
- do not share socks / tights / shoes / towels
- use a fungicide
allow named fungicide
allow wear silver(-impregnated) socks
- do not walk around barefoot in public / contaminated areas
allow wear flip flops in public / contaminated areas
ignore avoid moist conditions

1

[14]