

MARK SCHEME

GCSE

BIOLOGY

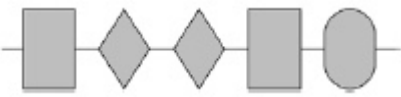
AQA - COMBINED SCIENCE

B 2 - TEST 1

Organisation

Beginner

Mark schemes

1. (a) **C** 1
- (b) **B** 1
- (c) **E** 1
- (d) any **one** from:
• they are too big
• they are insoluble 1
- (e) (pH) 7.5
allow answers in range 7.4 to 7.6 1
- (f) (enzyme **X**) stomach
(enzyme **Y**) small intestine 1
- (g)  1
- (h) lock and key 1
- (i) (some pH values):
change the shape of the active site
allow some pH values denature enzymes 1

(so) so substrate will no longer fit / bind to the active site 1
- [10]
2. (a) **A** artery
allow aorta 1
- B** ventricle
ignore references to left and right 1

C atrium

ignore references to left and right

allow atria

1

D vein

allow vena cava

1

(b) (i) stent

1

(ii) keeps (artery) open

1

so (more) blood can flow through

allow blood can flow (more) easily

ignore ref to blood clots

1

[7]

3.

(a) breathing rate when walking is twice that at rest

allow breathing rate when walking is 12 (breaths / minute) more than at rest

1

breathing rate when jogging is 5 times that at rest

allow breathing rate when jogging is 48 (breaths / minute) more than at rest

1

breathing rate when jogging is 2.5 times that when walking

allow breathing rate when jogging is 36 (breaths / minute) more than when walking

1

allow for 1 mark if no other marks gained: breathing rate at rest is 12 (breaths per minute), breathing rate when walking is 24 (breaths per minute) and breathing rate when jogging is 60 (breaths per minute)

or

breathing rate increases with increasing activity

max 2 marks if written in terms of heart rate

(b) (breathing rate increases)

to supply more oxygen / O₂

or

to supply oxygen / O₂ faster

allow to remove more carbon dioxide / CO₂

or

to remove carbon dioxide / CO₂ faster

*do **not** accept incorrectly written formulae*

1

for (aerobic) respiration

or

to reduce anaerobic respiration

or

to reduce lactic acid build up

1

(so) that more energy is transferred / released

or

(because) more energy is required

*do **not** accept used / produced / created or energy made*

1

reference to more / faster required at least once for full marks

(c) right ventricle / side of the heart pumps (blood) to the lungs

1

left ventricle / side of the heart pumps (blood) to the body

1

if no other marks scored allow 1 mark for one side pumps blood to the lungs and the other side pumps blood to the body

(d) any **one** from:

- (the left ventricle) has to pump blood further (than the right ventricle)

allow (the left ventricle) has to pump blood all around the body

- (the left ventricle) has to pump blood with a greater force (than the right ventricle)

allow (left ventricle) has to pump blood harder

- (the left ventricle) has to pump blood at a higher pressure (than the right ventricle)

1

there must be a comparative statement

- (e) any **one** from:
- strengthens heart (muscle)
 - reduces chance of another heart attack
ignore prevents / no heart attacks
 - reduces / controls weight
 - improves circulation
*allow decreases chance of fatty deposits
or fat building up (in arteries / blood vessels)
allow reduces resting heart rate*

1
[10]

4.

- (a) any **two** adaptations with linked descriptions from:
- many alveoli to provide a large surface area
 - good blood supply to maintain steep diffusion / concentration gradient
 - thin walls so gases do not have far to diffuse / travel
 - well ventilated to maintain steep diffusion / concentration gradient
*1 mark for adaptation and 1 mark for linked description
allow to collect oxygen or to bring carbon dioxide to lungs*

4

(b) an allergy

1

(c) any **one** from:

- narrow(er) / small(er) (air) passages / bronchioles
- less air / oxygen can pass through

1

(d) 3.3 (dm³)

1

(e) any **one** from:

- fake drug
- inactive form of drug

1

(f) neither the volunteers nor the scientists

1

(g) to avoid / reduce bias

1

(h) any **two** from:

- drug only works for severe asthma attacks
or
drug only increased lung capacity in severe asthma attacks
- drug had little effect **or** slight reduction in healthy people
- drug had no effect in mild asthma attacks
- drug does not alleviate the problem entirely

2

[12]

5.

(a) (i) wind

answers in either order

1

temperature

ignore weather

1

(ii) different plants have different sizes

ignore reference to validity

/ different numbers of leaves

/ different sizes of leaves

/ different plants take up different amounts of water

/ different number of stomata

/ different surface area

allow different plants need different amounts of water

1

(b) in table, in sequence:

C

B

A

all 3 correct = 2 marks

2 correct = 1 mark

0 or 1 correct = 0 marks

max 2

(c) transpiration

1

[6]

- 6.** (a) (i) any **one** from:
- glucose
 - oxygen
 - carbon dioxide
 - urea
 - water
- allow hormones*
allow named example of a product of digestion 1
- (ii) (cardiac) muscle
allow muscular 1
- (b) (i) **B** 1
- (ii) **D** atrium / atria
ignore references to left or right 1
- E** ventricle(s)
ignore references to left or right 1
- (c) (i) a vein 1
- (ii) an artery 1
- (iii) keeps artery open / wider
allow ecf from part cii 1
- (so) blood / oxygen can pass through (to the heart muscle) 1
- [9]**
- 7.** (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]

8.

(a)

Structure	Organ	Organ system	Tissue
Stomach	✓		
Cells lining the stomach			✓
Mouth, oesophagus, stomach, liver, pancreas, small and large intestine		✓	

all 3 correct = 2 marks

2 correct = 1 mark

1 or 0 correct = 0 marks

2

(b) (i) diffusion

allow phonetic spelling

1

(ii) glucose

1

(iii) mitochondria

1

[5]

9.

(a) mitosis

extra box ticked negates mark

1

(b) cell division is uncontrolled

extra box ticked negates mark

1

(c) any **one** from:

- smoking / tar
- alcohol
- carcinogens
allow named chemical
- viruses (living in cells)
- (ionising) radiation
accept UV / X-rays / gamma waves

1

(d) bar plotted at 78%

ignore width of bar

1

(e) testicular

extra box ticked negates mark

1

(f) prostate

extra box ticked negates mark

1

(g) any **two** from:

- improved treatment / drugs
- earlier diagnosis
- more cancer screening
- improved patient knowledge (of risk factors)
allow improved patient diet / lifestyle

2

[8]