

MARK SCHEME

GCSE

BIOLOGY

AQA - TRIPLE SCIENCE

B 5 - TEST 2

HOMEOSTASIS

Beginner

Mark schemes

- 1.** (a) pancreas 1
- (b) liver 1
- glycogen 1
- in this order*
- (c) would be digested / broken down (by enzymes / protease / pepsin / acid or to amino acids) 1
- allow denatured (by acid)*
- (d) use of 14.2 **and** 6.8 1
- 7.4
- allow an answer of 7.2 or 7.3 (using 14.1 and / or 6.9)
for 1 mark*
- an answer of 7.4 scores 2 marks*
- (e) any **one** from: 1
- (person A's) results are higher
ignore A peaks at a higher level than B
 - (A) increases for a longer time **or** peaks later
 - (A) takes longer to decrease **or** takes longer to return to normal
*allow other correct comparisons
allow a description using pairs of figures from graph at a given time*
- allow converse comparisons with person B as the subject*
- (f) a negative correlation 1

- (g) less carbohydrate / sugar / fat in diet
allow go on a diet
allow eat less
allow balanced / healthy diet

or

- lose weight **or** maintain a healthy weight
ignore diet unqualified

1

- (more) exercise
allow examples of exercise

1

[10]

2.

- (a) the temperature

1

the volume of water added to the soil

1

- (b) to stop light reaching the shoot

1

- (c) piece of thread (along shoot and mark length)

allow straighten the shoot

1

transfer to ruler / mm-scale

allow use of (flexible) tape measure for 2 marks

1

- (d) tip covered / B / removed / C grows straight up **or** does not bend (towards light)

allow tip covered / B / removed / C does not respond (to light)

1

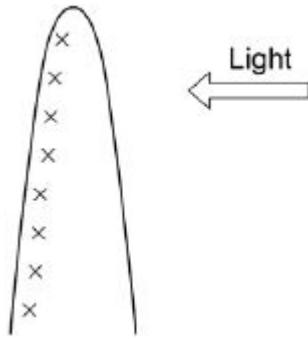
tip exposed / A / not covered / D bends (towards light)

tip exposed / A / not covered / D does respond (to light)

*allow only the ones with exposed tips or only A **and** D bend towards the light for 2 marks*

1

(e)



1

[8]

3.

(a) (i) receptor cells

1

(ii) eye(s)

accept retina

1

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

- gender / sex

- quality of eyesight

eg wearing glasses

- eg of factor that might affect reaction times

eg alcohol consumption / distractions / tiredness / health / time of day / amount of practice (at this test)

do not allow time / age

1

(ii) 182

allow 182.0

1

(iii) Any anomalies can be identified.

1

(iv) reaction time (too) long **or** reactions (too) slow

1

allow reaction time (too) slow

*allow examples of data quoted **or** derived from the table, eg (mean) reaction time for 90 year olds is 162 ms longer than for 75 year olds*

(so) more likely to have / cause an accident

1

[7]

4.

(a) (i) stimulus

1

(ii) cytoplasm

1

- (b) (i) ear(s)
in this order only 1
- eye(s)
accept retina 1
- skin
ignore extra detail 1
- (ii) A muscle 1

[6]

- 5.** (a) Lung 1
- (b) Filtering the blood 1
- (c) They will take in water and burst 1
- (d) (i) 6 1
- (ii) less than 28 1
- (iii) urea not reabsorbed
or
dialysis (fluid) has removed urea 1
- (e) (i) antibodies 1
- (ii) Tissue typing the donor kidney 1

[8]

- 6.** (a) (i) **B** 1
- (ii) **D** 1
- (iii) **C** 1

- (b) (i) insulin 1
- (ii) pancreas 1

[5]

- 7.** (a) (i) sensory neurone 1
- a synapse 1
- (ii) contract 1
- (iii) not connected to brain / coordinated only by spinal cord 1
- (iv) automatic / rapid (response) 1
- allow no thinking / faster / less time*
- protects body from danger / from damage / from burning 1

- (b) (i) caffeine decreases reaction time 1
- accept caffeine speeds up / quicker reactions*
- (ii) the two sets of results overlap (considerably) 1
- allow use of appropriate numbers – eg 5 of the ‘after’ results overlap with the ‘before’ results*
- allow ‘wide spread of results’*
- allow ‘it was just one person’ or ‘it was a small sample’*
- accept use of one pair of results only – if meaning is clear*
- accept use of one pair of overlapping results*
- (iii) any **two** sensible suggestions: eg 2
- more repetitions
 - perform investigation on several other people
 - use other (measured) amounts of coffee
 - use different / more time intervals
 - other suggested measure of reaction time – eg computer-generated light flash + time measurement
 - use pure caffeine or caffeine tablets

[10]

- 8.** (a) (i) in the direction of the force of gravity 1

(ii) against the force of gravity

1

(b) (i) diagram completed to show stem bending / leaning towards the window
the bend / lean can be at / from any point above pot level
ignore any leaves

1

(ii) more light (for leaves)
ignore heat

1

more photosynthesis / biomass / glucose

ref to 'more' needed once only, eg 'more light for photosynthesis' = 2 marks

if no other marks given allow 1 mark for 'to get light for photosynthesis'

1

[5]

9.

(a) sensory neurone

1

(b) (i) synapse

1

(ii) a chemical

1

(c) (What happens to the muscle)

mark both parts of the question together

any **one** from:

- contraction / contracts
ignore relaxation / relaxes / tenses
- gets shorter

1

(How this helps the body)

idea of protection for body (from damage / pain)

eg moves finger / arm away (from pin / stimulus / source of pain)

1

[5]

10.

(a) brain

in correct order only

1

blood

1

sweat

1

(b) (i) A

1

(ii) to replace ions lost (in sweat)

accept salts

allow named examples, eg. prevent cramps

1

(iii) any **one** from:

- there is too much glucose / sugar in the sports drink
- they shouldn't have too much glucose / blood sugar
- it would cause their blood glucose / sugar to rise (too high)

1

[6]

11.

(a) (i) (37C is the same as human) body temperature

1

(ii) any **one** from:

- urea
- glucose
- sodium

ignore water

1

(iii) (as they are) small enough to pass through (the membrane)

allow because there is a high concentration in the fake blood and a low concentration in the water (so will diffuse across)

1

(iv) glucose

1

(b) any **two** from:

- don't have to go to hospital **or** done at home rather than hospital
- less effect on lifestyle / can be mobile
- always filtering urea out
continuous is insufficient
- don't need a medical professional (to do it for you)
allow takes a shorter time
allow does not have to be connected to blood vessels
ignore 'less painful'

2

[6]

12.

(a) (i) skin

1

(ii) kidneys

accept kidney

1

(iii) lungs

accept lung

1

(b) (i) multiply temperature by number of students at that temperature and add them up

allow $(36.8 \times 5) + (36.9 \times 3) + (37.0 \times 6) + (37.1 \times 7) + (37.2 \times 3)$

allow 888

1

divide by number of students

allow divide by 24

1

(ii) 10 / ten

1

(iii) so enzymes work (well)

ignore death / overheating / hypothermia

allow body reactions work (well)

1

[7]