

MARK SCHEME

GCSE

BIOLOGY

AQA - COMBINED SCIENCE

B 5 - TEST 1

HOMEOSTASIS AND RESPONSE

Beginner

Mark schemes

1.

1 sector correct

gains 1 mark

but all sectors correct B = 2 S = 9 U = 8

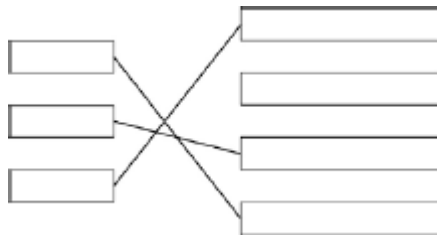
gains 2 marks

all sections labelled correctly (w.r.t. sector size)

for 1 mark

[3]

2.



extra lines negate mark(s)

[3]

3.

(a) 1800

allow - / minus 1800

1

(b) 3200

award both marks for correct answer irrespective of working

allow - / minus 3200

award 2 marks for 200 or -200 irrespective of working

allow ecf from part (a) for both routes to 2 marks

if no answer or incorrect answer then indication of addition of 1800

or their (a), 1000 and 400 gains 1 mark

2

(c) drink more / take in more from food & drink

allow ecf from (b), ie if answer to (b) is less than 3000 then accept drink less

if answer to (b) is exactly 3000 accept do nothing

1

200 (cm³)

accept ecf from (b) answer should be difference between (b) and 3000 if answer to (b) is 3000 accept they are the same

NB drink / take in 3200 (cm³) of water = 1 mark

drink / take in 200 (cm³) of water = 2 marks

ignore references to exercise / sweat

1

[5]

- 4.** (a) (i) follicle stimulating hormone / FSH 1
- (ii) oestrogen 1
- (b) (i) any **one** from:
- to help them have a baby / get pregnant
ignore to make them fertile
 - to stimulate egg production / release / maturation
 - own levels of FSH / LH / hormone (too) low
allow to increase hormone / FSH / LH levels
do not allow to increase oestrogen levels
- (ii) through the bloodstream 1
- (c) oestrogen 1
- progesterone 1
- [6]**

- 5.** (a) (i) pancreas 1
- (ii) Insulin causes glucose to move into cells. 1
- (b) (i) **A** 1
- rapid rise **or** fastest 1
- (ii) **2** 1
- (c) The pancreas could be rejected. 1
- [6]**

- 6.** (a) a stimulus 1
- (b) (i) **A** 1
- (ii) **C**
either order 1
- D** 1

(iii) E

1

(c) brain

allow spinal cord / CNS / central nervous system
*do **not** allow spine*

1

[6]

7.

(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]

8.

(a) light

must be in correct order
allow light waves

1

sound

allow sound waves

1

touch

1

(b) (i) 0.35 in skin column circled

only look at figures in table more than one figure circled negates mark

ignore values written in table for mean reaction time for eyes

1

(ii) 0.25 (seconds)

allow 1 mark for $\frac{0.23 + 0.27 + 0.24 + 0.26}{4}$

or 1 / 4

2

(iii) any **one** from:

ignore figures / references to sensitivity

- the ears / sound had the shortest reaction time
allow fastest
- the eyes / light had the longest reaction time
allow slowest
- ears and skin had similar reaction times
ignore references to anomalies or repeat values

1

[7]

9.

(a) pancreas

1

(b) (in the) blood(stream)

allow in the (blood) plasma

1

*ignore dissolved **or** in solution*

(c) any **two** from:

- concentration rises and falls in both people
- concentration is higher at start / always in person with diabetes
- concentration rises higher in person with diabetes

allow correct use of figures

2

plus any **two** from:

- concentration rises more rapidly in person with diabetes
- concentration stays high for longer in person with diabetes
- concentration does not return to starting level during test in person with diabetes, yet concentration returns to starting concentration by 90 minutes in person without diabetes
- concentration goes below starting concentration only in person without diabetes

2

(d) reduce carbohydrate / glucose / sugar in diet

1

(so) blood glucose concentration does not increase as much

1

(so) there is reduced named effect (of prolonged high blood glucose)

allow reduced short or long term consequences such as tiredness

or

increase urination

or

thirst

or *eye / kidney / nerve / heart disease*

1

[9]

10.

(a) any **one** from:

- temperature
- water

allow ions / salt / pH

allow oxygen / carbon dioxide

1

(b) 7 (mmol/dm³)

allow 6.75 to 7.25 (mmol/dm³)

1

(c) 1 (pm)

allow 12.30 to 1.10 (pm)

1

(d) insulin

1

(e) glucose moved from blood into (liver / muscle) cells

allow insulin transported in the blood and glucose moved into (liver / muscle) cells

1

to be stored as glycogen

allow to be converted into glycogen

1

- (f) the person injected too much hormone 1
- (g) decrease 1
- (because) glucose is used in respiration
allow increase only if linked to glucagon released for 2 marks 1
- (h) (blood glucose concentration would) not increase as much
allow (blood glucose concentration would) return to normal faster 1

[10]

11.

- (a) **A** sperm 1
- B** egg 1
- C** fertilised egg 1
- D** embryo 1
- (b) insert into mother
ignore fertilise / check fertilisation / check viability 1
- womb / uterus 1
- (c) (i) one quarter 1
- (ii) no / little chance of success over 42 1
- reference to table of only two women in the age bracket 40-42 years became pregnant
the statement 'only 2 out of 53 40-42 year old women became pregnant / had babies' gains 2 marks 1
- (iii) so fewer twins / multiple births
or
 multiple births more dangerous 1

[10]