

Homeostasis

Mark Scheme

Level	GCSE (9-1)
Subject	Combined Science – Trilogy - Biology
Exam Board	AQA
Topic	4.5 Homeostasis and Response
Sub-Topic	Homeostasis
Difficulty Level	Bronze Level
Booklet	Mark Scheme

Time Allowed: 55 minutes

Score: / 55

Percentage: /100

Grade Boundaries:

M1.(a) pancreas

apply list principle

1

(b) (i) protein

apply list principle

1

(ii) any **one** from:

- (controlling / changing) diet
accept sugar(y foods) / named eg
ignore references to starch / fat / protein / fibre
- exercise
accept example, eg go for a run
- pancreas transplant
accept named drug eg metformin

1

(c) (i) increase

ignore reference to women

1

then fall

1

relevant data quote (for male)

*eg max at ages 65–74 **or** starts at 10 (per thousand) **or** max at 130 (per thousand) **or** ends at 120 (per thousand)*
accept a difference between any pairs of numbers in data set
accept quotes from scale eg '130' or '130 per thousand' but
***not** '130 thousand'; to within accuracy of +/- 2 (per thousand)*

1

- (ii) (between 0 and 64) more females (than males) **or** less males (than females)

ignore numbers

allow eg females more diabetic than males

1

- (over 65) more males (than females) or less females (than males)

allow eg males more diabetic than females

1

[8]

M2.(a) pancreas

allow phonetic spelling

1

- (b) (i) A

1

shortest / quicker time (to work)

1

- (ii) D

1

acts for longest time

mark dependent on D

allow D will last until 09.00 / breakfast / 24 hours

1

- (iii) diet / exercise

*if 'diet' is qualified, then will need correct qualification, e.g.
'less carbohydrate / sugar'*

accept pancreas transplant / stem cell treatment

1

[6]

M3. (a) insulin

extra ring drawn cancels the mark

1

(b) pancreas

extra ring drawn cancels the mark

1

(c) diabetes

extra ring drawn cancels the mark

1

[3]

M4. (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]

M5. (a) pancreas

1

(b) the diabetic should get more energy from fat

1

the diabetic should get less energy from carbohydrate

1

(c) (use) insulin

allow pancreas / stem cell transplant

*do **not** allow injection / transplant / stem cells / tablets alone*

ignore exercise

1

[4]

M6. (a) pancreas

1

(b) any **one** from

- (controlling / changing) diet
accept descriptions as to how diet could be changed eg eat less sugar(y foods) ignore reference to fat / protein
- exercise
accept example eg go for a run
- pancreas transplant
accept named drug eg metformin

1

(c) (i) increase

ignore reference to women

1

then fall

1

relevant data quote (for male)

max at ages 65 - 74

*eg starts at 10 (per thousand) **or** max at 130 (per thousand)*

***or** ends at 120 (per thousand)*

accept a difference between any pairs of numbers in data set

quoting of scale or per thousand but not 'thousands'

accuracy ± 2

1

(ii) *ignore numbers*

(between 0 and 64) more females (than males) / less males

allow eg females more diabetic than males

1

(over 65) more males (than females) / less females

1

[7]

- M7.** (a) (i) 50
award 2 marks for correct answer irrespective of working
*award 1 mark for selection of 60 **and** 10*
2
- (ii) any **two** from:
 - increases
 - (then) decreases
 - highest at 65 – 74 (years old) **or** maximum 112 (per thousand)
allow peaks at 65 - 74
*ignore comparisons with men*2
- (b) (i) stomach
1
- (ii) any sensible reference to diet **or** carbohydrate intake **or** pancreas / stem cell transplant
*eg eat less / no sugary food **or** eat more fibre **or** go on a diet*
***or** watch what you eat*
ignore eat more protein
*do **not** accept reduce salt*
1
- M8.** (a) (i) more
less
the same
(accept appropriate numbers)
for 1 mark each
3

[6]

	(ii)	sweating / evaporation / perspiration for 1 mark	1	
	(b)	in food / named solid food / eating from respiration for 1 mark each	2	[6]
M9.	(a)	(i)	all plots correct <i>Tolerance $\pm \frac{1}{2}$ square</i> <i>allow 1 mark for 2 correct plots</i>	2
		(ii)	6 <i>correct answer with no working = 2</i> <i>allow 1 mark for $(60 \div 100) \times 10$</i> <i>N.B. correct answer from incorrectly recalled relationship / substitution = 0</i>	2
	(b)	lungs	1	
		liver	1	
		kidneys	1	[7]

M10. 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]