

# MARK SCHEME

# GCSE

## BIOLOGY

## AQA - COMBINED SCIENCE

---

B 5 - TEST 2

HOMEOSTASIS AND RESPONSE

Beginner

## Mark schemes

<b>1.</b>	(a) (i)	stimulus	1		
		(ii)	cytoplasm	1	
	(b) (i)	ear(s)			
			<i>in this order only</i>	1	
			eye(s)		
			<i>accept retina</i>	1	
		skin			
		<i>ignore extra detail</i>	1		
	(ii)	A muscle	1		
				<b>[6]</b>	
<b>2.</b>	(a)	<b>A</b>	1		
	(b)	<b>F</b>	1		
	(c)	<b>B</b>	1		
	(d)	<b>D</b>	1		
	(e)	nucleus	1		
	(f)	(makes reactions) faster			
		<i>allow to reduce risk of damage / burns</i>			
		<i>allow for protection / safety</i>	1		
(g)	alcohol	1			
	tiredness	1			
				<b>[8]</b>	

- 3.** (a) in the blood(stream)  
*allow plasma*  
*ignore dissolved or in solution* 1
- (b) all three plots correct  
*accept two correct plots for 1 mark* 2
- suitable line drawn 1
- (c) 1 hour 1
- (d) 230–185  
*identification of steepest part of graph and correct readings taken* 1
- = 45 1
- (e) line on graph showing extrapolation for person **B**  
 correct value read from graph (at 130 mg per 100 cm<sup>3</sup>)  
*allow 1 mark for a value of 4.5–5 hours if no extrapolation shown* 2

[9]

- 4.** (a)
- the senses may be in any box.*  
*do not credit list of receptors*  
*the appropriate organ must be adjacent* 2
- | Mark first   | Look for                       |   |
|--------------|--------------------------------|---|
| <b>Sense</b> | <b>Receptor</b>                |   |
| taste        | tongue <b>or</b><br>taste buds |   |
|              | <i>do not credit mouth</i>     | 2 |
| smell        | nose                           |   |
| hearing      | ear<br>cochlea                 | 2 |



- (d) 17.0  
*allow answers in range 17.0–17.3 cm* 1
- (e) 0.5 cm 1
- (f) 23.5 1
- does not fit the pattern **or** at least 5 cm higher than the other values 1
- (g) The results are for the left and right hands of different people 1

[10]

6.

- (a) all points plotted accurately  
*allow  $\pm 0.5$  small square tolerance*  
*allow 1 mark for 3 or 4 points plotted accurately* 2
- line of best fit drawn 1
- (b) extrapolation on graph 1
- 9.5 (%)  
*allow value in range 9.4–9.6*  
*allow correct reading from incorrect extrapolation* 1
- (c) any **one** from:  
  - eating habits may change
  - people are more informed about the causes of diabetes
  - change in exercise patterns*allow new cure* 1
- (d) any **two** from:  
  - diabetes (in the world) is increasing  
*allow low / high income countries are increasing*
  - diabetes in low-income countries is rising faster (than high-income / world)
  - high-income countries and low-income countries were the same in 2010
  - high-income countries have been higher than low-income but now / 2018 the situation is reversed
  - diabetes in high-income countries was higher than the world total (from 1986 – 1993) but is now lower  
*allow correct use of data* 2

2

(e) people are becoming more obese

1

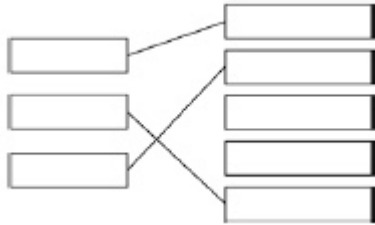
people are eating more sugar

1

[10]

7.

(a)



1

1

1

(b) 23%

*allow 1 mark for evidence of pill + condom = 180°/50%*

2

(c) any **two** from:

- want to have a baby
- not having sex
- past the menopause
- pregnant

*allow any sensible reason*

2

(d)

<b>Level 2:</b> Scientifically relevant features are identified; the way(s) in which they are similar/different is made clear and (where appropriate) the magnitude of the similarity/difference is noted.	3-4
<b>Level 1:</b> Relevant features are identified and differences noted.	1-2
No relevant content	0
<b>Indicative content</b> <b>combined pill</b> <ul style="list-style-type: none"><li>• <b>A</b> – easy to take, very effective and free on NHS, but</li><li>• <b>D</b> – it can cause headaches/side effects, must remember to take it every day</li></ul> <b>condom</b> <ul style="list-style-type: none"><li>• <b>A</b> – only need it when you have sex, no side effects, very inexpensive, but</li><li>• <b>D</b> – it is not as reliable, more difficult to use</li></ul> <b>sterilisation</b> <ul style="list-style-type: none"><li>• <b>A</b> – 100% effective but</li><li>• <b>D</b> – probably will not be able to have a family, risks of surgery</li></ul>	

4

[11]

8.

(a) A

1

(b) D

1

(c) A = synapse

1

B = motor (neurone)

1

*in this order only*

(d) a reflex action

1

(e) 12 (ms)

1

0.012 (s)

1

*an answer of 0.012 (s) scores 2 marks*

- (f) A 1
- (g) controls the release of an egg 1
- (h) in the blood(stream)  
*allow in the plasma / blood vessels*  
*do **not** accept in blood cells / platelets* 1
- (i) (person) C 1

any **one** from:

- the testosterone level is high(er)  
*allow testosterone is the main male (sex) hormone*
  - the oestrogen **and / or** progesterone levels are low
  - the oestrogen and progesterone levels do not rise and fall as they do in a menstrual cycle  
*allow there is no menstrual cycle*
- no marks if A or B given* 1

**[12]**