



# **GCSE Biology**

## **Hormonal Co-ordination**

### **Mark Scheme**

**Time available: 60 minutes**

**Marks available: 50 marks**

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Mark schemes

1.

(a) to allow implantation of the embryo

1

(b) oestrogen

1

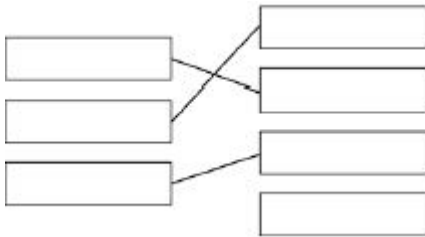
(c) 13 / 14 / 15 / 16

*allow any number in range 13 to 16*

*allow any range within these values e.g. 14–16*

1

(d)



*extra line from a method cancels the mark*

1  
1  
1

(e) more reliable than diaphragm / spermicidal cream

*allow fewer pregnancies than diaphragm / spermicidal cream*

1

low chance of pregnancy

*allow only 1 more pregnancy than the pill (per 100 women per year)*

*allow almost as good as the pill*

*allow reference to one named example*

1

no side effects

*allow easy to get / buy*

*allow easy to use*

*allow prevent / reduce spread of STDs / gonorrhoea / HIV*

*ignore cost*

1

[9]

2.

(a) pancreas

1

(b) liver

1

glycogen

*in this order*

1

(c) would be digested / broken down (by enzymes / protease / pepsin / acid or to amino acids)

*allow denatured (by acid)*

1

(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*

1

*an answer of 7.4 scores 2 marks*

(e) any **one** from:

- (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*

1

*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]

1

<b>3.</b>	(a) <b>A</b>	1
	(b) <b>E</b>	
	(c) 28	
	<i>allow 27–29</i>	1
	(d) progesterone	1
	(e) any <b>two</b> from:	
	• inhibits FSH production / release	
	• prevents egg maturation	
	<i>allow prevents egg growth</i>	
	• prevents ovulation	
	<i>allow prevents egg release</i>	
	<i>ignore prevents egg production</i>	2
	(f) oestrogen	1
	testosterone	
	<i>allow in this order only</i>	1
		<b>[8]</b>
<b>4.</b>	(a) any <b>three</b> from:	
	• a (chemical) messenger	
	<b>or</b>	
	an organic substance	
	<i>allow correct named example – e.g. protein / modified amino acid / catecholamine / steroid</i>	
	• made by the endocrine system / an endocrine gland / endocrine organ	
	<i>allow made by / released from a (ductless) gland</i>	
	• affects (a) specific / target organ(s) / tissue(s)	
	• released into the blood	
	<i>allow carried by the blood</i>	3
	(b) insulin <b>and</b> glucagon	
	<i>both required for 1 mark correct spelling only for glucagon</i>	1

- (c) **Level 2 (3-4 marks):**  
 Relevant points (reasons / causes) are identified, given in detail and logically linked to form a clear account.

**Level 1 (1-2 marks):**

Relevant points (reasons / causes) are identified, and there are attempts at logically linking. The resulting account is not fully clear.

No relevant content (0 marks)

**Indicative content**

- (0–0.5 h: ) glucose from meal enters blood  
**or**  
 increase in blood glucose (to 6.5 mmol / dm<sup>3</sup>)
- glucose detected by pancreas
- pancreas secretes insulin
- (insulin causes) glucose to move (out of blood) into cells / liver
- liver converts glucose to glycogen
- causing a fall in blood glucose (after 0.5h)
- low blood glucose (< 5.0 mmol / dm<sup>3</sup>) detected by pancreas
- pancreas releases glucagon
- liver converts glycogen to glucose (which enters blood)
- blood glucose rises (after 1 h **or** to 5.2 mmol / dm<sup>3</sup> (at 1.5 h))

[8]

5.

- |   |   |
|---|---|
| (a) <b>A</b> – pituitary                        | 1 |
| <b>B</b> – adrenal                              | 1 |
| (b) ovary                                       | 1 |
| (c) diaphragm<br><i>allow phonetic spelling</i> | 1 |
| (d) condom                                      | 1 |

(e) **Level 2 (3–4 marks):**

A detailed and coherent evaluation is provided which considers a range of advantages and disadvantages and comes to a conclusion consistent with the reasoning.

**Level 1 (1–2 marks):**

An attempt to describe the advantages and disadvantages is made, which may not come to a conclusion. The logic may be inconsistent at times.

**0 marks:**

No relevant content.

**Indicative content**

**advantages of the plastic IUD:**

- is effective for longer than the copper IUD
- does not need to be replaced as often as the copper IUD
- although the pain of periods are more severe, the pain with the copper IUD is likely to be worse
- can reduce the bleeding during a period
- most of the possible side effects are not serious, eg feeling sick, acne and headaches.

**disadvantages of the plastic IUD:**

- needs to be implanted for a period of time before it is effective ie not emergency contraception
- can make the pain of period more severe
- can cause more side effects than the copper IUD
- can cause some more severe side effects such as cysts on the ovaries

an understanding that the side effects are only possible and may not necessarily occur

**additional examiner guidance:**

- pupils should add value to the points in the table and should not just be copies verbatim
- credit can also be given for other correct advantages and disadvantages from the candidates' own knowledge and understanding
- allow converse points if clearly made

4

[9]

6.

(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*

1

(ii) through the bloodstream

1



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(c) oestrogen

1

progesterone

1

**[6]**