

Mark Scheme

Combined Science GCSE

Animal Coordination, Control and Homeostasis Test
(Levels 4-9)

	Answer	Marks
1. (a)	adrenal gland.	(1)
1. (b)	thyroid gland.	(1)
1. (c)	all of the above	(1)
1. (d)	'Fight or flight' response	(1)

(Total for Question 1 = 4 marks)

	Answer	Marks
2. (a)	metabolic rate	(1)
2. (b)	negative feedback system.	(1)
2. (c)	• low levels of thyroxine stimulate TRH production • in the hypothalamus • this triggers TSH production • in the pituitary gland • TSH acts on thyroid gland • thyroid produces thyroxine • thyroxine inhibits TRH when levels are normal • TSH production stops Answers should be given in a logical and coherent order for full marks.	(8)

(Total for Question 1 = 4 marks)

	Answer	Marks
3. (a)	i) Menstruation Accept period/bleeding/uterine lining breaks down Accept womb in place of uterine/uterus ii) Ovulation Accept egg released iii) Uterine lining builds up Accept womb in place of uterine/uterus	(1) (1) (1)
3. (b)	• stimulates the lining of the uterus (womb) to grow and repair • after menstruation has occurred	(2)

3. (c)	• Progesterone Maximum of 2 marks from any of the below: • maintains the uterine (womb) lining • required for (fertilised) egg to implant • so no period/menstruation occurs	(3)
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(Total for Question 1 = 4 marks)

	Answer	Marks																		
4. (a)	<table border="1"> <thead> <tr> <th></th><th colspan="2">Method of Contraception</th></tr> <tr> <th></th><th>Barrier</th><th>Chemical</th></tr> </thead> <tbody> <tr> <td>Contraceptive pill</td><td>x</td><td>✓</td></tr> <tr> <td>Intrauterine device (coil)</td><td>x</td><td>✓</td></tr> <tr> <td>Condom</td><td>✓</td><td>x</td></tr> <tr> <td>Contraceptive implant</td><td>x</td><td>✓</td></tr> </tbody> </table> 1 mark for each correct row		Method of Contraception			Barrier	Chemical	Contraceptive pill	x	✓	Intrauterine device (coil)	x	✓	Condom	✓	x	Contraceptive implant	x	✓	(4)
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	Barrier	Chemical																		
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Condom	✓	x																		
Contraceptive implant	x	✓																		
4. (b)	• contain hormones/oestrogen or progesterone (or both) • prevents stimulation of FSH (follicle stimulating hormone) • egg is not released from ovary • fertilisation cannot occur without an egg	(4)																		
4. (c)	Award max. two statements in reference to condoms: • high reliability/effectiveness • can get pregnant at any time if wanted/short-term action • can fail/split/break • cannot be reused • protection from infection/STIs Award max. two statements in reference to implant: • high reliability/effectiveness • may have to wait for hormones to normalise before getting pregnant long term action • no protection from infection/STIs	(4)																		

(Total for Question 1 = 4 marks)

	Answer	Marks
5. (a)	• sperm • egg • outside • uterus Answers must be given in that order.	(4)
5. (b)	• FSH stimulates maturation of eggs • enables more eggs to be available for IVF treatment	(1)
5. (c)	• production of 'designer babies' or selecting for desirable traits • choosing gender of the baby • selecting against inherited conditions	(1)

(Total for Question 5 = 6 marks)

	Answer	Marks																		
6. (a)	<table border="1"> <thead> <tr> <th></th><th colspan="2">Type of Diabetes</th></tr> <tr> <th></th><th>Type 1</th><th>Type 2</th></tr> </thead> <tbody> <tr> <td>The body produces insufficient insulin levels</td><td>✓</td><td>✓</td></tr> <tr> <td>The body does not use the insulin effectively (insulin resistance)</td><td>x</td><td>✓</td></tr> <tr> <td>Can be treated with insulin injections</td><td>✓</td><td>✓</td></tr> <tr> <td>Can be treated through diet and exercise</td><td>x</td><td>✓</td></tr> </tbody> </table>		Type of Diabetes			Type 1	Type 2	The body produces insufficient insulin levels	✓	✓	The body does not use the insulin effectively (insulin resistance)	x	✓	Can be treated with insulin injections	✓	✓	Can be treated through diet and exercise	x	✓	(4)
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Can be treated through diet and exercise	x	✓																		
6. (b)	• insulin is secreted by the pancreas • travels to the liver in the bloodstream • liver converts glucose into glycogen • glycogen is stored in the liver • blood glucose level decreases	(4)																		
6. (c)	= $74 \div 2.8561$ = 25.91 Award 1 mark for conversion of cm into m. Award 2 marks for correct answer, regardless of working.	(2)																		

(Total for Question 6 = 10 marks)