

# AQA Style

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GCSE

COMBINED SCIENCE: TRILOGY

Foundation Tier

Biology Paper 2

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**F**

**Mark Scheme**



## Question 1

Question	Answers	Extra information	Mark															
01.1	nucleus	If more than one box is ticked, award no marks.	1															
01.2	fertilisation	If more than one box is ticked, award no marks.	1															
01.3	<p>cell A</p> <p>cell B</p> <p>13</p> <p>23</p> <p>26</p> <p>46</p>	<b>1</b> mark for each correct line.  If more than one line is drawn from one box, award no marks for that box.	2															
01.4	<table border="1"><thead><tr><th>Feature</th><th>Mitosis</th><th>Meiosis</th></tr></thead><tbody><tr><td>Produces gametes.</td><td></td><td>✓</td></tr><tr><td>Produces genetically identical cells.</td><td>✓</td><td></td></tr><tr><td>Produces two daughter cells.</td><td>✓</td><td></td></tr><tr><td>Produces daughter cells with half the number of chromosomes.</td><td></td><td>✓</td></tr></tbody></table>	Feature	Mitosis	Meiosis	Produces gametes.		✓	Produces genetically identical cells.	✓		Produces two daughter cells.	✓		Produces daughter cells with half the number of chromosomes.		✓	<b>1</b> mark for each correct row.  If more than one box is ticked in each row, award no marks for that row.	4
Feature	Mitosis	Meiosis																
Produces gametes.		✓																
Produces genetically identical cells.	✓																	
Produces two daughter cells.	✓																	
Produces daughter cells with half the number of chromosomes.		✓																
<b>Total</b>			<b>8</b>															



## Question 2

Question	Answers	Extra information	Mark
02.1	<p>A</p> <p>B</p> <p>C</p> <p>D</p> <p>ovary</p> <p>pancreas</p> <p>pituitary gland</p> <p>testis</p> <p>gall bladder</p>	<p>1 mark for each correct line.</p> <p>If more than one line is drawn from one box, award no marks for that box.</p>	4
02.2	testosterone	Answers in this order only.	1
	oestrogen		1
02.3	<p>Involved in maintaining the uterus lining.</p> <p>Stimulates the release of an egg.</p> <p>Causes the egg to mature in the ovary.</p> <p>follicle stimulating hormone (FSH)</p> <p>luteinising hormone (LH)</p> <p>progesterone</p> <p>testosterone</p>	<p>1 mark for each correct line.</p> <p>If more than one line is drawn from one box, award no marks for that box.</p>	3
<b>Total</b>			<b>9</b>



### Question 3

Question	Answers	Extra information	Mark
03.1	11.5 (mmol/L)	Allow answers in the range of 11.4 to 11.6.	1
03.2	0.5 (hours)		1
03.3	insulin		1
03.4	(in type 2 diabetes) insulin is produced by the pancreas  but the body cells no longer respond/are less responsive to insulin	Allow hormone named in <b>03.3</b> for insulin.	1  1
03.5	carbohydrate controlled diet/reduce carbohydrates  exercise	Diet unqualified is not sufficient for the mark.  Answers in either order.	1  1
<b>Total</b>			<b>7</b>

## Question 4

Question	Answers	Extra information	Mark
04.1	electrical impulses	Allow impulses. Allow electrical signals.	1
04.2	<pre> graph LR     MN[motor neurone] --- A[A]     MN --- C[C]     R[receptor] --- B[B]     R --- D[D]     RN[relay neurone] --- C     RN --- E[E] </pre>	<b>1</b> mark for each correct line.  If more than one line is drawn from one box, award no marks for that box.	3
04.3	automatic/quick/fast/rapid response  to protect the body/to protect from danger		1  1
04.4	drop distance	Allow a description of drop distance i.e. the distance the ruler falls before it is caught.	1
04.5	12 (cm)		1
04.6	caffeine decreases reaction times	Allow caffeine speeds up reactions.	1
04.7	Any <b>two</b> from: <ul style="list-style-type: none"> <li>• use a better method for measuring reaction time (e.g. computer reaction timer)</li> <li>• more repeats of each test</li> <li>• repeat the test with more people</li> <li>• use the same distance between finger and thumb</li> <li>• use a ruler with a more precise scale (e.g. mm scale)</li> </ul>	Ignore accurate.	2
<b>Total</b>			<b>11</b>



## Question 5

Question	Answers	Extra information	Mark
05.1	the number of deaths increases		1
	then decreases		1
	reference to correct data from the graph	e.g. from 1993-2006/after 2006/to a maximum of 2150 deaths	1
05.2	$\frac{2150 - 638}{2150} \times 100$	Allow $\frac{1512}{2150} \times 100$	1
	70.3 (%)	Answer 70.3 (%) with no working scores <b>2</b> marks. Allow any correct rounding.	1
05.3	Bacteria reproduce at a fast rate.		1
05.4	Any <b>two</b> from: <ul style="list-style-type: none"><li>• doctors should not prescribe antibiotics for non-serious or viral infections</li><li>• patients should complete their course of antibiotics</li><li>• the agricultural use of antibiotics should be restricted</li></ul>		2
<b>Total</b>			<b>8</b>





<b>06.4</b>	<b>Level 2:</b> Some logically linked reasons are given with at least one <u>benefit</u> to each method. For full marks there should also be a simple judgement.	3-4
	<b>Level 1:</b> Relevant points are made. They are not logically linked. Two relevant points awards two marks.	1-2
	<b>No relevant content.</b>	0
	<b>Indicative content:</b> <b>Benefits of preimplantation genetic diagnosis:</b> <ul style="list-style-type: none"><li>• No (or less) chance of miscarriage as a result of the procedure.</li><li>• Does not involve abortion/less pain or suffering for parents/ ethical reason against abortion.</li><li>• Detected earlier so less chance for the embryo to have developed/reference to 3 days instead of 10 weeks.</li><li>• Multiple embryos mean a higher chance of having an unaffected embryo.</li><li>• Spare embryos mean you won't need to repeat the full procedure for a second child.</li></ul> <b>Benefits of chorionic villus sampling:</b> <ul style="list-style-type: none"><li>• Lower cost to the NHS.</li><li>• If the embryo is healthy or parents decide not to terminate, there will be no embryos destroyed.</li><li>• Lower risk of false-positive result.</li></ul>	
<b>Total</b>		<b>10</b>



## Question 7

Question	Answers	Extra information	Mark
07.1	<b>Level 3:</b> The method includes counting the number of plants <b>and</b> measuring the light intensity in more than one location. For full marks students must also include another valid statement.		5-6
	<b>Level 2:</b> The method includes counting the number of plants <b>or</b> measuring the light intensity in more than one location. For four marks the students must also include another valid statement.		3-4
	<b>Level 1:</b> The method includes counting the number of plants <b>or</b> measuring the light intensity in at least one location. Two marks can be given for two valid statements.		1-2
	<b>No relevant content.</b>		0
	<b>Indicative content</b>		
	<ul style="list-style-type: none"> <li>• Use of a tape measure to produce a transect down the hillside.</li> <li>• Quadrats placed;</li> <li>• at regular locations along the transect.</li> <li>• Counting of the number of daisies in the quadrat.</li> <li>• Use of the light meter to measure light intensity in each quadrat.</li> <li>• Repetition of transect.</li> <li>• Repetition of light intensity measurement in each quadrat.</li> <li>• Calculation of the mean light intensity in each quadrat.</li> <li>• Calculation of the mean number of daisies in each light intensity.</li> <li>• Relate the light intensity to the number of daisies e.g. graph.</li> </ul>		
07.2	grass		1
07.3	to make glucose (by photosynthesis)	Allow convert light energy to chemical energy.	1
07.4	when the rabbit population is high, there is a lot of food available for the foxes	Explanation may start from any point in the cycle.	1
	the number of foxes increases	Allow predator for fox and prey for rabbit.	1
	the foxes eat the rabbits so the rabbit population falls		1
	there is less food available for the foxes so the fox population falls		1
<b>Total</b>			<b>12</b>



## Question 8

Question	Answers	Extra information	Mark
08.1	a change in a gene/DNA		1
08.2	Any <b>four</b> from: <ul style="list-style-type: none"><li>• variation within the population in size or number of fat storage/mounds/humps</li><li>• mutation results in a second hump/mound or more fat storage</li><li>• little food available in the desert or could be days between finding food.</li><li>• reference to natural selection in the correct context</li><li>• camels with the larger/most humps were most likely to survive in the environment</li><li>• these camels would pass genes/alleles for the large/extra humps to the next generation</li></ul>		4
<b>Total</b>			<b>5</b>