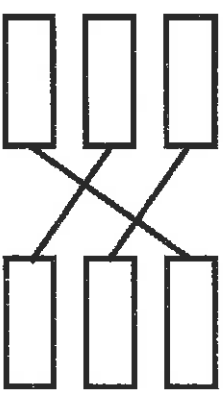


Question	Answer	Marks	Guidance
9	<p><b>Level 3 (5–6 marks):</b>                      Answer fully describes the various reasons why the vaccination programmes has continued, looking at the benefit vs risk and the idea that the one case is not linked to the vaccination. Includes the idea that this leads to the best outcome for the greatest number of people. Quality of written communication does not impede communication of the science at this level.</p> <p><b>Level 2 (3–4 marks):</b>                      Answer describes some reasons why the vaccination programme has continued and considers the benefits and risks. Quality of written communication partially impedes communication of the science at this level.</p> <p><b>Level 1 (1–2 marks):</b>                      Answer includes one reason why the programme has not been stopped or why it should continue. Quality of written communication impedes communication of the science at this level.</p> <p><b>Level 0 (0 marks):</b>                      Insufficient or irrelevant science. Answer not worthy of credit.</p>	6	<p>This question is targeted at grades up to A*</p> <p><b>Indicative scientific points may include:</b></p> <ul style="list-style-type: none"> <li>• vaccination provides protection against the cancer</li> <li>• prevents a large number of women dying each year</li> <li>• continuing vaccination programme leads to the best outcome for the greatest number of people</li> <li>• it has been fully tested</li> <li>• side effects are only minor and more severe reactions are very unlikely</li> <li>• vaccinations can never be completely safe as side effects will vary due to genetic differences</li> <li>• benefit from vaccination outweighs the risk, ie it saves more lives than it may put at risk</li> <li>• no evidence to suggest that the vaccine caused the death of the girl</li> <li>• the one case of the girl dying does not provide sufficient evidence to believe that the vaccine is unsafe</li> <li>• need more data to be certain of a link between the vaccine and the death.</li> </ul> <p><b>Use the L1, L2, L3 annotations in Scoris; do not use ticks.</b></p>
	<b>Total</b>	<b>6</b>	

Question	Answer	Mark	Guidance
(b)	<p><b>(Level 3)</b> Answer gives a well balanced argument and describes at least two advantages and two disadvantages. Answer includes ethical arguments as well as the practical arguments. Quality of written communication does not impede communication of the science at this level.</p> <p><b>(Level 2)</b> Answer attempts to give a balanced argument and describes at least two advantages and one disadvantage or one advantage and at least two disadvantages. Answer may include ethical arguments. Quality of written communication partly impedes communication of the science at this level.</p> <p><b>(Level 1)</b> Answer describes an advantage and/ or a disadvantage but the argument is poorly balanced. Quality of written communication impedes communication of the science at this level.</p> <p><b>(Level 0)</b> Insufficient or irrelevant science. Answer not worthy of credit.</p>	6	<p><b>This question is targeted at grades up to A/A*</b></p> <p><b>Indicative Content:</b></p> <p><i>Arguments For:</i></p> <ul style="list-style-type: none"> <li>• reduces number of people with influenza / epidemics</li> <li>• because influenza is common virus and highly infectious</li> <li>• could help to eradicate influenza</li> <li>• reduces cost of care / treatment</li> <li>• reduces burden on medical profession</li> <li>• reduces number of work days lost / sick days taken</li> </ul> <p><i>Arguments Against:</i></p> <ul style="list-style-type: none"> <li>• very expensive to vaccinate everyone</li> <li>• very difficult to administer / manage</li> <li>• very time consuming to vaccinate everyone</li> <li>• vaccination could be dangerous for some people / can have side effects</li> <li>• people react in different ways to vaccination</li> <li>• people do not want to be vaccinated</li> <li>• people should be able to choose whether or not they are vaccinated</li> <li>• infringement of human rights to make it compulsory</li> <li>• vaccination is against some people's religious beliefs</li> </ul> <p>the last three points are the ethical arguments not wanting to be vaccinated is insufficient for an ethical argument</p> <p>ignore ethical / unethical unless qualified</p>
	<b>Total</b>	<b>8</b>	

Question	Answer	Mark	Guidance
4 a	Idea of counts over time	1	Allow BPM
b	6900	1	if no answer written below question, check table
	both correct calculations of pulse rate (1) correct conclusion from their data (1)	2	Byron's is $5440/80 = 68$ / Colin is $4970/70 = 71$ <b>Allow ecf for second marking point</b>
	the pulse rate( measurements) varies /there is insufficient variation in the measurements (1)  <b>any one from:</b> repeat the measurements (1) take the mean (1) measure time taken to return to resting pulse rate(1) measures the pulse rate over a long time period (1)	2	ignore discussion of outliers
	<b>Total:</b>	<b>6</b>	
5	200.96/ 201.06/ 201.14/ 201.1/ 201 (2)	2	correct answer = 2 marks $3.14 \times 8 \times 8 / \pi \times 8 \times 8 / \pi \times 8^2 = 1$ mark

Question	Answer	Mark	Guidance
b	<p><b>[Level 3]</b> Answer contains: description AND conclusion AND explanation</p> <p>Quality of written communication does not impede communication of the science at this level. (5 – 6 marks)</p> <p><b>[Level 2]</b> Answer contains: description AND conclusion OR description AND explanation OR conclusion AND explanation</p> <p>Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks)</p> <p><b>[Level 1]</b> Answer contains a description OR an explanation OR a conclusion. Quality of written communication impedes communication of the science at this level. (1 – 2 marks)</p> <p><b>[Level 0]</b> Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)</p>	6	<p>This question is targeted at grades up to A*</p> <p><b>Indicative scientific points may include:</b></p> <p><b>descriptions:</b></p> <ul style="list-style-type: none"> <li>• B has the greatest clear area around it</li> <li>• A has a clear area around it (although not as big as B)</li> <li>• C has no/ smallest clear area around it</li> <li>• water has the same area as C</li> </ul> <p><b>conclusions:</b></p> <ul style="list-style-type: none"> <li>• B is the most effective antibiotic</li> <li>• A is effective against the bacteria but not as effective as B</li> <li>• suggests C is not effective against the bacteria</li> <li>• water as good as C against bacteria</li> </ul> <p><b>explanations:</b></p> <ul style="list-style-type: none"> <li>• antibiotics are killing/destroying or inhibiting bacteria</li> <li>• where antibiotics are effective the plate appears clear</li> <li>• bacteria may be resistant to C</li> <li>• mechanism of resistance</li> <li>• water acts as a control</li> <li>• to show that water/paper disc has no effect on the bacteria</li> <li>• allows other results to be compared against it</li> </ul>
c	<p>controls all variables except that which is being investigated (1)</p> <p>Increase confidence in results(1)</p>	2	<p>allow keep everything the same apart from the thing being tested.</p> <p>have trust in results/ to allow results to be compared</p>
d	<p><b>Any 2 from:</b> (firstly) tested on <b>human</b> cells / animals (1) (subsequently) trialled on humans(1) blind trials/use of placebo (1)</p>	2	
	<b>Total:</b>	<b>12</b>	

Question	Answer	Marks	Guidance
7 (a)	chemicals that kill/inhibit bacteria/fungi (1)	1	allow viruses/microorganisms / microbes allow fight / treat infection do not allow diseases
(b)	(i) decrease (1); starting at 90% (1)	2	
(ii)	mutation / not completing course of antibiotics (1); left with only the resistant bacteria so they become a greater proportion of the population as time progresses (1)	2	allow natural selection for one mark
(iii)		1	
(iv)	antibiotics don't affect viruses (so line would be horizontal on x-axis)	1	allow antibiotics don't treat viruses
	<b>Total</b>	<b>7</b>	

Question	Answer	Marks	Guidance																				
8 (a)	<p><b>any three:</b>                      chance of curing their cancer (1)                      chance of extending the life expectancy (1)                      side effects are relatively minor (1)                      chance to contribute to research (1)                      potentially save lives in the future (1)</p>	3	<p><b>allow</b>                      save them                      drug works                      chance of survival                      develop new drugs</p>																				
(b)	<p><b>any two from</b>                      to be certain of effectiveness; (1)                      side effects of drug; (1)                      to allow sufficient data to be obtained for reliable results; (1)                      make sure drug is safe; (1)</p>	2																					
(c)	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>doctor only</th> <th>patient only</th> <th>both doctor and patient</th> <th>neither doctor nor patient</th> </tr> </thead> <tbody> <tr> <td>open label</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>blind</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>double-blind</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> </tbody> </table>		doctor only	patient only	both doctor and patient	neither doctor nor patient	open label			✓		blind	✓				double-blind				✓	1	
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<b>Total</b>		<b>6</b>																					

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7	(a)	(i)	(her blood pressure is) <u>normal</u>	1																									
		(ii)	11	1																									
		(iii)	idea of <b>partial effectiveness</b> / success (1)	2	drug has not been completely effective / only partially successful, no mark for "effective" or "not effective" alone <b>accept</b> a description of where it has succeeded/been effective <b>AND</b> where it hasn't																								
			comment on <b>both</b> category (changes) (1)		higher value <b>remains</b> in moderate hypertension category whereas lower value is <b>reduced</b> to mild hypertension category / nearly at normal category																								
		(b)	(i)	1	Ignore "reduces values" as that is in stem of question, must link to categories line must have highest point at the end <b>reject</b> line with zigzags/plateau(s) <b>ignore</b> minor deviations in freehand drawn lines																								
			(ii)	2	all correct = 2 marks one mistake = 1 mark																								
			<table border="1"> <thead> <tr> <th></th> <th>More confident</th> <th>Less confident</th> <th>Makes no difference</th> </tr> </thead> <tbody> <tr> <td>the study was carried out in the USA</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>100 000 people took part</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>the study was peer reviewed</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>it was carried out in 2011</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>the study was funded by a company that sells fresh fruit juices</td> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>		More confident	Less confident	Makes no difference	the study was carried out in the USA			✓	100 000 people took part	✓			the study was peer reviewed	✓			it was carried out in 2011			✓	the study was funded by a company that sells fresh fruit juices		✓			
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Question	Answer	Marks	Guidance
8 (a)	pituitary (gland)	1	<b>accept</b> reasonable attempt at spelling <b>ignore</b> references to brain, <b>reject</b> other body parts if also named
(b)	(i) concentrated increases more more more	1	
	(ii) E B D C A	1	
(c)	as water level changes, ADH levels change (1)  (negative feedback is where the) body works to reverse a change away from the normal (1)	2	Feedback(1) - Links water amount to ADH ie less water (in plasma) gives more ADH <b>OR</b> more ADH means less urine ( <b>accept</b> wrong correlation for this mark)  Negative(1) - returns to normal idea
	<b>Total</b>	<b>5</b>	



Question	Answer	Marks	Guidance
3 (a)	B E; D C; F A;	3	if LHS and RHS reversed = 1 mark max Only mark what is inside box unless box contents are crossed out and then mark anything outside of box.
(b)	<pre>                     graph TD                         Alcohol[alcohol] --&gt; MoreADH[more ADH]                         Ecstasy[Ecstasy] --&gt; DelayedADH[delayed ADH production]                         MoreADH --&gt; DiluteUrine[larger volume of dilute urine]                         MoreADH --&gt; NoChange1[no change]                         DelayedADH --&gt; ConcentratedUrine[smaller volume of concentrated urine]                         DelayedADH --&gt; NoChange2[no change in the volume or concentration of urine]                     </pre>	2	alcohol lines correct = 1 mark ecstasy lines correct = 1 mark
(c)	<p>any four from:</p> <ul style="list-style-type: none"> <li>store water;</li> <li>gets water from food;</li> <li>more ADH so (keeps more water) / kidneys reabsorb more water;</li> <li>gets water from respiration;</li> <li>does not sweat/no sweat glands;</li> <li>cool underground / nocturnal behaviour;</li> <li>produces more concentrated urine / smaller volume of urine;</li> <li>produces dry faeces/reabsorption of water in colon;</li> </ul>	4	ignore all reference to adaptation and evolution
<b>Total</b>		<b>9</b>	