

1)														
(a)	<p>Similarity</p> <p>idea of extracting drug (from the plant / soup) / tested on patients / idea of try to find suitable dose ;</p> <p>Any two differences from</p> <ol style="list-style-type: none"> <li>1. idea that only contemporary testing will use animals / eq ;</li> <li>2. idea that only contemporary testing will {test on healthy people / have phase 1} ;</li> <li>3. idea that only contemporary testing will pay volunteers ;</li> <li>4. idea that only contemporary testing may involve double-blind trials ;</li> <li>5. idea that only contemporary testing will {use statistical analysis / reference to phase 3 / use large number } ;</li> <li>6. idea of more regulation ;</li> <li>7. idea of controlling {factors / variables / eq} in tested cohort e.g. age, lifestyle ;</li> </ol>	max (3)												
(b)(i)	0 ;	(1)												
(b)(ii)	idea of the emotional state of the patient e.g. belief that {it will work / they are receiving the drug} ;	(1)												
(b)(iii)	<p>All three figures correct for one mark</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 25%;">treatment</th> <th style="width: 25%;">Concentration of drug / mg</th> <th style="width: 50%;">Actual improvement / Arbitrary Units</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>6.0</td> </tr> <tr> <td></td> <td></td> <td>12.1</td> </tr> <tr> <td></td> <td></td> <td>12.5 ;</td> </tr> </tbody> </table>	treatment	Concentration of drug / mg	Actual improvement / Arbitrary Units			6.0			12.1			12.5 ;	(1)
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(b) (iv)	<ol style="list-style-type: none"><li>1. reference to positive {relationship / correlation} / increased improvement with increased concentration ;</li><li>2. larger improvement between 400 and 600 / improvement increases less {between 600 and 800 / after 600} ;</li><li>3. credit correct manipulation of the data / eq ;</li></ol>	max (2)
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2)		
(a)	<ol style="list-style-type: none"> <li>idea that, GD considers one species but SR considers {different / number} species ;</li> <li>idea that, GD considers {alleles / genotypes / eq} but SR is within a {habitat / area / eq} ;</li> </ol>	(2)
(b)(i)	<ol style="list-style-type: none"> <li>take {less / smaller} space / eq ;</li> <li>can have more individuals / eq ;</li> <li>reference to {greater / more} genetic variety ;</li> <li>idea of less {maintenance / cost} ;</li> <li>likely to survive longer / eq ;</li> <li>can freeze seeds / eq ;</li> </ol>	max (2)
(b)(ii)	<ol style="list-style-type: none"> <li>idea of {greater / maintain} genetic variety e.g. wider gene pool, different alleles ;</li> <li>idea of less chance of inbreeding ;</li> <li>idea of reducing chance of storing seeds with {low viability / disease / eq} ;</li> </ol>	max (2)
(c)(i)	<p>correct working shown e.g. <math>(3/48) \times 100</math> ;</p> <p>correct answer = {6.3 / 6.25} ;</p> <p><u>Note:</u> 2 marks for correct answer 1 mark for incorrect answer but correct working</p>	(2)
(c)(ii)	<ol style="list-style-type: none"> <li>species B ;</li> <li>lowest germination success / eq ;</li> <li>idea that decrease in mean germination success is the greatest after drying ;</li> <li>credit manipulated figures e.g. 17 less after drying, planted immediately is 8 lower than highest{A / D}, after drying 22 less than highest {A / C} ;</li> </ol>	max (3)
(c)(iii)	<ol style="list-style-type: none"> <li>reference to drying ;</li> <li>reference to sterilisation / fungicide ;</li> <li>reference to low temperature e.g. freezing, cool ;</li> <li>reference to low oxygen / eq ;</li> <li>reference to low humidity / eq ;</li> <li>reference to absence of light / eq ;</li> <li>reference to check viability e.g. germination / embryo presence / eq ;</li> </ol>	max (2)

3)

(a) (i)	<p>Any three from:</p> <ol style="list-style-type: none"> <li>1. length (of fibre) / eq ;</li> <li>2. diameter (of fibre) / eq ;</li> <li>3. temperature / eq ;</li> <li>4. fibre came from the same source / eq ;</li> <li>5. stored for the same length of time / eq ;</li> <li>6. same way of applying the {masses / knots / eq} ;</li> <li>7. same humidity / eq ;</li> <li>8. water content of fibre / level of drying ;</li> </ol>	<p>max (3)</p>
(a)(ii)	<ol style="list-style-type: none"> <li>1. {all / four} sets of results added together ;</li> <li>2. divided by 4 / eq ;</li> </ol>	<p>(2)</p>
b)	<p>idea that break mass would be to the nearest 50 grams (rather than 100 grams) / reference to smaller percentage error ;</p>	<p>(1)</p>
c)	<p>cannot land on {foot / person / eq} / cannot cause injury ;</p>	<p>(1)</p>
(d) (i)	<p>{sample 2} anomalous / outlier / does not fit the {trend / pattern} ;</p>	<p>(1)</p>
(d) (ii)	<ol style="list-style-type: none"> <li>1. oil is a {non-renewable / finite / eq} (resource) ;</li> <li>2. (plant fibres) can be regrown / replanted / eq (so is sustainable) ;</li> <li>3. ref to time scale ;</li> </ol>	<p>max (2)</p>

4)

(a)	<ol style="list-style-type: none"> <li>1. appearance / the outward expression (of a cell or organism) / eq ;</li> <li>2. reference to {genotype / eq} contribution ;</li> <li>3. reference to environmental factors ;</li> </ol>	<p>max (2)</p>
(b)(i)	<ol style="list-style-type: none"> <li>1. non smokers / eq ;</li> <li>2. idea that it acts as a comparison / shows the situation without smoking ;</li> </ol>	<p>(2)</p>
(b)(ii)	<p>lung cancer / no lung cancer ;</p>	<p>(1)</p>

(b)(iii)	<ol style="list-style-type: none"> <li>1. the more (packs) smoked, the higher the chance of developing lung cancer / positive correlation / eq ;</li> <li>2. small increase in risk if smoke up to 20 packs per year / eq ;</li> <li>3. greater increase in risk if smoke 21 or more (packs) per year / eq ;</li> <li>4. linear increase for 21 or more / eq ;</li> <li>5. credit correct manipulation of the data e.g. 35X greater;</li> </ol>	(2)
(b)(iv)	<ol style="list-style-type: none"> <li>1. idea that increased chance of lung cancer if close relative has cancer</li> <li>2. for those that do not smoke there is risk if cancer in family / eq ;</li> <li>3. that close family members will have more alleles in common (with those involved in the investigation) ;</li> </ol>	max (2)
(b)(v)	in the 1-20 (packs) smoked per year cohort, there was a {lower risk of getting lung cancer if a close relative has had cancer / higher risk if no close relative with cancer} / eq ;	(1)
(b)(vi)	idea that the more (packs) smoked per year, the greater the risk of getting lung cancer ;	(1)

5)

(a)	<ol style="list-style-type: none"> <li>1. natural ;</li> <li>2. evolution / speciation / reproduction;</li> <li>3. behavioural ;</li> </ol>	(3)
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(b)	<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Description</th> <th style="width: 50%;">Adaptation</th> </tr> </thead> <tbody> <tr> <td>Hearing becoming temporarily less sensitive after listening to a loud music for a few hours</td> <td>Physiological ;</td> </tr> <tr> <td>Heart beats faster when the hormone adrenaline is released</td> <td>Physiological ;</td> </tr> <tr> <td>People in a cold climates having a shorter neck than people living in hot, dry conditions</td> <td>Anatomical ;</td> </tr> </tbody> </table>	Description	Adaptation	Hearing becoming temporarily less sensitive after listening to a loud music for a few hours	Physiological ;	Heart beats faster when the hormone adrenaline is released	Physiological ;	People in a cold climates having a shorter neck than people living in hot, dry conditions	Anatomical ;		(3)
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<p>6) a)</p>	<p>1. year 1 ;</p> <p>2. {more / eq } species present (in year 1) / greater variety of species ;</p> <p>Ignore references to abundance.</p>	<p>(2)</p>
<p>b)(i)</p>	<p>mitosis ;</p>	<p>(1)</p>
<p>b)(ii)</p>	<p>1. low genetic diversity is {few / low number of / less / eq} different <u>alleles</u> in the {gene pool / population / species} / small gene pool / eq ;</p> <p>2. (asexual reproduction leads to) all offspring being {genetically identical / clones / same genotype / same <u>alleles</u> } ;</p> <p>3. no meiosis/ no recombination of genetic material / eq;</p> <p>4. idea of variation only possible as a result of mutation ;</p>	<p>(2)</p>
<p>(c)</p>	<p>(QWC - Spelling of technical terms must be correct and the answer must be organised in a logical sequence)</p> <p>1. (description of how to vary the independent variable) Idea of at least 5 different nitrate (ion) concentrations ;</p> <p>2. Reference to repeats at each concentration ;</p> <p>3. (measuring of dependent variable)</p> <p>Increase in {length/mass/ height} ;</p> <p>4. use plants that are genetically {similar / same} / same age / same original {height/ size / mass} of plant ;</p> <p>5. &amp; 6. Controlling abiotic factors, maximum 2 from list:</p> <ul style="list-style-type: none"> <li>• time (at least a week) allowed for growth</li> <li>• other mineral ions constant</li> <li>• temperature</li> <li>• light (intensity)</li> <li>• water provided</li> <li>• pH of {solution / soil}</li> <li>• CO<sub>2</sub> concentration ;;</li> </ul> <p>7. idea of control described, e.g. no nitrate/ soil with no extra nitrate ;</p>	<p>(5)</p>

CHERRY HILL TUITION EDEXCEL (B) BIOLOGY AS PAPER 14 MARK SCHEME

7)	<ol style="list-style-type: none"> <li>1. platelets ;</li> <li>2. thromboplastin ;</li> <li>3. enzymes ;</li> <li>4. prothrombin ;</li> <li>5. thrombin ;</li> </ol>	<p style="text-align: center;"><b>NB: allow phonetic spelling</b></p> <ol style="list-style-type: none"> <li>1. ACCEPT thrombocytes</li> <li>2. ACCEPT enzyme if not given in Mp3</li> <li>3. ACCEPT thromboplastin if not given in Mp2</li> </ol>	<b>(5)</b>
8)			
(a)	<ol style="list-style-type: none"> <li>1. idea of large surface area to volume ratio or that it is thin (body) ;</li> <li>2. idea that this helps diffusion e.g. short diffusion distance, faster diffusion ;</li> </ol>	<ol style="list-style-type: none"> <li>1. IGNORE flat, small unqualified, thin membrane, thin skin etc NOT cell wall</li> <li>2. IGNORE gas exchange NOT osmosis</li> </ol>	<b>(2)</b>
(b)(i)	<ol style="list-style-type: none"> <li>1. solubility of oxygen decreases as temperature increases / eq ;</li> <li>2. credit correct manipulation of figures ;</li> </ol>	<ol style="list-style-type: none"> <li>1. ACCEPT converse, negative correlation</li> <li>2. units not required but if given then they must be correct e.g. 8.2 mg dm<sup>-3</sup> difference in solubility between 0 and 40 °C, solubility halved between 5 °C and 40 °C</li> </ol>	<b>(2)</b>
(b)(ii)	<ol style="list-style-type: none"> <li>1. idea that there is quite a lot of dissolved oxygen in the water at this temperature ;</li> <li>2. idea of oxygen concentration gradient (between water and flatworm's cells) ;</li> <li>3. idea of enzyme activity being temperature-dependent ;</li> <li>4. idea that water below 15°C would be too cold for {enzymes / metabolism / eq} to work effectively ;</li> <li>5. idea that it is a balance between oxygen availability and {enzyme activity / kinetic effects /eq} ;</li> </ol>	<p>IGNORE there is most oxygen available</p> <ol style="list-style-type: none"> <li>1. ACCEPT sufficient O<sub>2</sub>, not enough O<sub>2</sub> at higher temps.</li> <li>2. Ref. to diffusion or gas exchange alone, not sufficient for the mark</li> <li>3. ACCEPT e.g. 15°C is optimum for their enzymes NB: This is for linking enzymes and temperature, Mp4 is a development of Mp3 stating something specific.</li> <li>4. IGNORE ref to effects above 15°C</li> </ol>	<b>(3)</b>
(c)	<ol style="list-style-type: none"> <li>1. heart needed to {pump / move / eq} blood (around the body) ;</li> <li>2. reference to mass flow ;</li> <li>3. idea that many animals have a small surface area to volume ratio ;</li> <li>4. idea that a circulatory system is needed to overcome limitations of diffusion / eq ;</li> <li>5. credit correctly named molecule transported (in blood) ;</li> <li>6. idea that many animals have a high metabolic rate ;</li> </ol>	<ol style="list-style-type: none"> <li>4. ACCEPT idea that diffusion is not sufficient</li> <li>5. oxygenated blood not enough by itself ACCEPT any appropriate molecule in the blood ACCEPT idea of thermoregulation e.g. heat</li> </ol>	<b>(4)</b>