

CHERRY HILL TUITION EDEXCEL (B) BIOLOGY AS PAPER 8 MARK SCHEME

1)			
(i)	<p>1. (total) cholesterol levels in people with mutation are not higher than people without mutation / eq ;</p> <p>2. LDL (cholesterol) levels in people with mutation are not higher than people without mutation / eq ;</p> <p>3. HDL (cholesterol) levels in people with mutation are not lower than people without mutation / eq ;</p> <p>4. credit correct use of manipulated figures ;</p>	<p>1, 2, 3: ACCEPT converse, similar / little difference. Decreased/reduced is <b>not</b> equivalent to lower.</p> <p>1. IGNORE same</p> <p>2. IGNORE same</p> <p>3. ACCEPT ref to HDL to LDL ratio higher in people with the mutation.</p> <p>4. must be manipulated e.g. difference calculated and not just quoted (difference in LDL= 10, total cholesterol= 7) ACCEPT without units</p>	(2)
(ii)	(plant) statin ;	IGNORE named drug, sterol, stanin	(1)
(b)(iii)	<p>1. muscle {inflammation / pain / eq}</p> <p>2. liver {damage / failure / eq}</p> <p>3. joint {aches / pains / eq}</p> <p>4. nausea/ constipation / diarrhoea / indigestion / flatulence / loss of appetite / eq</p> <p>5. kidney {damage /failure /eq}</p> <p>6. cataracts / blurred vision</p> <p>7. diabetes</p> <p>8. allergies / skin inflammation / skin rash / eq</p> <p>9. respiratory problems / persistent cough / nosebleeds / eq</p> <p>10. headaches / dizziness / depression / insomnia / ringing in ears / fatigue / eq ;</p>	<p>NOT cancer or reduced vitamin absorption IGNORE affect ACCEPT problems as equivalent to damage etc</p> <p>2. ACCEPT disease</p> <p>4. ACCEPT vomiting</p> <p>5. ACCEPT kidney disease</p> <p>10. ACCEPT mood swings</p>	(1)

2)		
(a)(i)	A ;	(1)
(a)(ii)	A ;	(1)
(a)(iii)	D ;	(1)
(a)(iv)	B ;	(1)
(a)(v)	D ;	(1)

b)(i)	<ol style="list-style-type: none"> <li>1. {control / no treatment / placebo} results in (mean) increase in {volume / eq} of plaque / eq ;</li> <li>2. {drug / treatment} causes a decrease in plaque volume / eq ;</li> <li>3. 70 mm<sup>3</sup> difference in means / eq ;</li> <li>4. comment on (the error bars show) plaque increased in some and decreased in others ;</li> <li>5. comment on (length of error bars show) the change in plaque size was more varied in the treatment group e.g treatment group has a greater range of data ;</li> </ol>	max (2)
-------	--	------------

(b)(ii)	<p>Any two from</p> <ol style="list-style-type: none"> <li>1. reference to small sample size e.g. only 20 in each group, only 40 people tested in total, not enough data ;</li> <li>2. idea that {there is no indication of statistical significance / the error bars overlap} ;</li> <li>3. idea that (2 months) is a very short period of time ;</li> <li>4. idea that there is no evidence that the reduction in volume is permanent ;</li> <li>5. reference to {other variables / appropriate named variable} not taken into account ;</li> </ol>	max (2)
---------	---	------------

3)

a)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>X</td> <td>✓</td> <td>✓</td> </tr> <tr> <td></td> <td>✓</td> <td>X</td> <td>✓</td> </tr> </table> <p>;;; Any 2 correct for one mark</p>						X	✓	✓		✓	X	✓	(3)
	X	✓	✓											
	✓	X	✓											

b)(i)	<ol style="list-style-type: none"> <li>1. {base / eq} (of aorta) ;</li> <li>2. prevents backflow (of blood into heart / ventricles) / eq ;</li> <li>3. during { diastole / atrial systole } / eq ;</li> </ol>	(3)
-------	---	-----

CHERRY HILL TUITION EDEXCEL (B) BIOLOGY AS PAPER 8 MARK SCHEME

(b)(ii)	<ol style="list-style-type: none"> <li>1. {middle layer of wall of vessel / eq } / tunica media / in the muscle layer ;</li> <li>2. reference to allows { stretching / recoil / description} ;</li> <li>3. to prevent damage (of the aorta) / eq / {to maintain the pressure of the blood / eq } ;</li> </ol>	(3)
4) (a)	idea that {it overcomes limitations of diffusion / it is involved in transport / heat transfer} ;	(1)
(b)	<p>Arrow / arrows in the labelled right side of diagram to indicate the following:</p> <ol style="list-style-type: none"> <li>1. blood (entering) through vena cava ;</li> <li>2. blood flowing from atrium into ventricle ;</li> <li>3. blood (leaving heart) through pulmonary artery ;</li> </ol>	(3)
(c)	<ol style="list-style-type: none"> <li>1. idea that it keeps oxygenated and deoxygenated blood separate ;</li> <li>2. idea that this results in as much oxygen as possible being carried to the {tissues / cells } ;</li> <li>3. reference to different pressures in each side / need for different pressures explained ;</li> </ol>	max (2)

5)

(a) QWC	<p>(QWC - Spelling of technical terms (<i>shown in italics</i>) must be correct and the answer must be organised in a logical sequence)</p> <ol style="list-style-type: none"> <li>idea of (<i>mutation</i> / named mutation) causing different base sequence ;</li> <li>reference to different {sequence of <i>amino acids</i> / <i>primary structure</i>} / eq ;</li> <li>reference to {<math>\beta</math> chain / <i>haemoglobin</i> / <i>protein</i> / <i>polypeptide</i>} being the wrong shape ;</li> <li><i>haemoglobin</i> no longer binds oxygen / binds less oxygen / eq ;</li> <li>{less / no } oxygen {supplied / carried / eq} (to the cells) / eq ;</li> <li>correct reference to <i>respiration</i> / eq ;</li> <li>idea of breathlessness due to body trying to take in more oxygen ;</li> <li>idea of tiredness due to lack of energy ;</li> </ol>	max (4)						
b)	<table border="1"> <tr> <td>25(%)</td> <td>25(%)</td> <td>50(%)</td> </tr> <tr> <td>no chance / 0 (%)</td> <td>no chance / 0 (%)</td> <td>100 (%)</td> </tr> </table> <p>All 3 in a row = 2 marks 1 or 2 in a row correct = 1 mark</p>	25(%)	25(%)	50(%)	no chance / 0 (%)	no chance / 0 (%)	100 (%)	(4)
25(%)	25(%)	50(%)						
no chance / 0 (%)	no chance / 0 (%)	100 (%)						
(c) QWC	<ol style="list-style-type: none"> <li>reference to use of {normal / correct} {allele / gene};</li> <li>for {haemoglobin / B chain};</li> <li>reference to introduction of {gene / allele/ DNA} into cells ;</li> <li>cells named as (bone) marrow / eq ;</li> <li>reference to use of vector (to introduce gene into cells) ;</li> <li>(named vector) e.g. virus, liposome ;</li> <li>credit reference to appropriate mode of delivery of vector e.g. injection into (bone) marrow ;</li> <li>reference to need for repeated treatment ;</li> </ol>	max (4)						

6)		
(i)	<p>Any two from:</p> <ol style="list-style-type: none"> <li>1) high {salt / sodium}</li> <li>2) high cholesterol</li> <li>3) high saturated fat / high trans-fat</li> <li>4) high calories</li> <li>5) high alcohol</li> <li>6) low fibre / low NSP</li> <li>7) low antioxidants / low vitamin C / low vitamin E ;</li> </ol>	(1)
(ii)	<p>blood pressure falls too low / coughs / swelling of ankles / impotence / tiredness / constipation / headache / confusion / depression / excessively low heart rate / allergy / stroke / provoked type II diabetes / frequent urination / fainting / dizziness / vomiting / dry mouth / breathing difficulties / irregular heart rate / chest pain / hives / rash / dehydration / reduced circulation effects / low potassium / blurred vision / eq ;</p>	(1)
7)		
(a)	<ol style="list-style-type: none"> <li>1. each {drink / tea} has different caffeine contents / eq ;</li> <li>2. coffee has the highest and white tea has the lowest caffeine / eq ;</li> <li>3. idea that coffee has far more caffeine than the others ;</li> <li>4. cocoa has a similar caffeine content to Oolong tea / eq ;</li> <li>5. credit manipulated figures to quantify any of the statements ;</li> </ol>	max (3)
(b)(i)	<ol style="list-style-type: none"> <li>1. idea of heart rate determined before treatment ;</li> <li>2. idea that daphnia need to be put into tea and allowed to acclimatise ;</li> <li>3. practical detail e.g. use of microscope ;</li> <li>4. details of determining heart rate described / eq ;</li> <li>5. ref to named controlled variable ;</li> <li>6. ref to {repeats / replicates} ;</li> <li>7. idea that heart rate of daphnia determined in {white tea (only) / known caffeine concentration} ;</li> </ol>	max (4)

<b>(b)(ii)</b>	<p><b>For:</b></p> <ol style="list-style-type: none"><li>1. <i>Daphnia</i> are very simple organisms / <i>Daphnia</i> have basic nervous system / eq ;</li></ol> <p><b>Against:</b></p> <ol style="list-style-type: none"><li>1. use of (any) animal is wrong / how can we be sure what the <i>Daphnia</i> can feel / ref. to possibility that the <i>Daphnia</i> could die / eq ;</li></ol>	<b>(2)</b>
----------------	--	------------