

1)

(a)	<ol style="list-style-type: none"> 1. rate is same for up to 30 minutes / eq ; 2. faster (uptake) for A than B / eq ; 3. (uptake of) A is linear throughout whereas (uptake of) B is not / eq ; 4. uptake of substance B levels off at {2 to 2.2} hours whereas uptake of A does not / eq ; 5. credit correct manipulation of comparative figures ; 	max (3)
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(b) 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"> 1. correct ref to diffusion (of substance B) occurring due to concentration difference / eq ; 2. idea of rate of uptake decreases ; 3. as the concentration gradient decreases / eq ; 4. (net) uptake stops / eq ; 5. when concentration inside cell equals that outside the cell / eq ; 	max (4)
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(c)	<ol style="list-style-type: none"> 1. active transport is {against /eq} concentration gradient /eq ; 2. active transport requires ATP /eq ; 3. ref to involvement of (membrane) proteins in active transport ; 	max (2)
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2)

(a)	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">Name of blood vessel</th> <th style="padding: 5px;">Carries blood away from the heart</th> <th style="padding: 5px;">Carries oxygenated blood</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Aorta</td> <td style="padding: 5px;">✓</td> <td style="padding: 5px;">✓</td> </tr> <tr> <td style="padding: 5px;">Vena cava</td> <td style="padding: 5px;">x</td> <td style="padding: 5px;">x</td> </tr> <tr> <td style="padding: 5px;">Pulmonary artery</td> <td style="padding: 5px;">✓</td> <td style="padding: 5px;">x</td> </tr> <tr> <td style="padding: 5px;">Pulmonary vein</td> <td style="padding: 5px;">x</td> <td style="padding: 5px;">✓</td> </tr> </tbody> </table> <p>[Any 2 correct answers for 1 mark];;;;</p>	Name of blood vessel	Carries blood away from the heart	Carries oxygenated blood	Aorta	✓	✓	Vena cava	x	x	Pulmonary artery	✓	x	Pulmonary vein	x	✓	(4)
Name of blood vessel	Carries blood away from the heart	Carries oxygenated blood															
Aorta	✓	✓															
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Pulmonary vein	x	✓															

CHERRY HILL TUITION EDEXCEL (B) BIOLOGY AS PAPER 10 MARK SCHEME

(b)(i)	<ol style="list-style-type: none"> 1. (blood flows) from heart to gills ; 2. (blood flows) from gills to (rest of) body / eq ; 3. (blood flows) from body back to heart ; 4. ref to single circulation ; 	<p style="text-align: right;">maxi (3)</p>
(b)(ii)	<ol style="list-style-type: none"> 1. blood flows {faster /at higher pressure / eq} (to the body) ; 2. blood flows {slower /at lower pressure / eq} to the lung ; 3. idea that this reduces risk of damage to lungs ; 4. correct ref to more efficient {exchange / transport} of gases / eq ; 	<p style="text-align: right;">maxi (2)</p>
(c)	<ol style="list-style-type: none"> 1. correct ref to large surface area to volume ratios ; 2. idea that (all) {cells / eq} are very close to the {blood / heart} ; 3. idea that diffusion is fast enough for exchange of {nutrients / gases / waste} ; 4. idea of low metabolism ; 5. idea that movement of blood back into the heart is fast enough (to return blood back into the heart) ; 	<p style="text-align: right;">max (2)</p>

3)

(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"> 1. idea that there is a cascade of events (leading to blood clotting) ; 2. ref to <i>thromboplastin</i> (starting the cascade) ; 3. ref to conversion of <i>prothrombin</i> into <i>thrombin</i> ; 4. idea that {<i>thromboplastin / thrombin</i>} is {an enzyme / a catalyst} ; 5. ref to conversion of <i>fibrinogen</i> into <i>fibrin</i> ; 6. ref to formation of mesh of {fibres / <i>fibrin</i>} ; 7. ref to requirement of {calcium ions/ Ca^{2+} / vitamin K} ; 8. ref to {<i>platelets</i> / blood cells} getting trapped (in the mesh) ; 	<p style="text-align: right;">max (4)</p>
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CHERRY HILL TUITION EDEXCEL (B) BIOLOGY AS PAPER 10 MARK SCHEME

(b)(i)	<ol style="list-style-type: none"> 1. snake venom decreases the clotting time / eq ; 2. (overall) as mass of snake venom increases the clotting time decreases / eq ; 3. idea that only a very small increase (0.004) in mass causes very sharp drop in clotting time ; 4. concentrations above {0.004 / 0.02} cause little change in clotting time / eq ; 5. credit correct use of manipulated figures ; 	max (3)
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(b) (ii)	<p>idea of one of the following:</p> <p>if the snake venom has similar effects as a known clotting factor an idea of its mode of action can be worked out /</p> <p>how deadly the snake is /</p> <p>compare to normal (clotting) process /</p> <p>possible use as medication /</p> <p>for research into antidotes / eq ;</p>	(1)
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c) (i)	<ol style="list-style-type: none"> 1. ref to an enzyme as a protein ; 2. ref to {3D / tertiary / globular} structure ; 3. ref. to named bonds (holding structure in place) ; 4. between the R groups ; 5. ref to active site ; 6. idea of specificity of active site ; 	max (3)
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c)(ii)	<ol style="list-style-type: none"> 1. it is one of the enzymes /similar to one of the enzymes, in the clotting process / eq ; 2. idea that has active site complementary to one of the substrates ; 3. ref to it activating other enzymes ; 4. ref to effect on platelets ; 5. idea that it triggers the clotting process ; 	maxi (2)
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4)

(a)	<ol style="list-style-type: none"> 1. atria / atrium; 2. aorta ; 3. left ; 4. artery ; 5. vena cava ; 	(5)
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(b)	<ol style="list-style-type: none"> 1. diastole / atrial systole ; 2. the {atrioventricular / bicuspid / tricuspid} valves are open / semi-lunar valves are closed ; 	(2)
5)		
a)(i)	<ol style="list-style-type: none"> 1. idea that frequent cocaine use results in {higher / an increase in / eq } levels in both blood components (compared to occasional use) ; 2. correct manipulation of figures to approximate the increase in levels of one of the blood components ; 3. frequent use increases fibrinogen beyond normal range / eq ; 4. idea that the levels of both the blood components are within the range for normal levels in occasional users ; 	max (3)
a)(ii)	<p>Any one of the following ideas</p> <ol style="list-style-type: none"> 1. the levels are given as a {range / not one level / blood components within normal level range} 2. no indication of data analysis e.g. spread of data, statistics 3. no indication of number in {samples / study / eq} 4. no indication of other variables / named variable / eq ; 	max (1)

<p>(b)</p>	<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"> 1. idea that <i>von Willebrand</i> factor results in <i>platelets</i> sticking to {the endothelium / each other} ; 2. reference to release of <i>thromboplastin</i> (from <i>platelets</i>) ; 3. (as a result) the blood clotting process is triggered / eq ; 4. credit one correct detail of clotting process ; 5. reference to more <i>fibrinogen</i> resulting in the clot {being larger / growing faster} ; 6. reference to <i>von Willebrand</i> factor making the <i>platelets</i> stickier ; 7. as a result of {<i>platelet</i> stickiness / <i>platelets</i> sticking together} the {clot grows faster / blood flow is decreased / eq} ; 8. If the blood is flowing slower then there is an increased chance of blood clotting / eq ; 	<p>max (4)</p>
<p>(c)</p>	<ol style="list-style-type: none"> 1. idea that a correlation is {a relationship between two factors / when one factor changes another factor changes} ; 2. fibrinogen increases with (cocaine) use / eq ; 3. heart attacks increase with cocaine use / eq ; 4. idea that increased fibrinogen levels have not been shown to result in the increase in heart disease ; 	<p>max (2)</p>

6) number		
i(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"> 1. reference to CFTR {protein / channel} eq ; 2. reference to a different {amino acid / sequence of amino acids / eq} (on defective CFTR protein) ; 3. reference to change in protein ; 4. reference to role of protein in transporting chloride ions ; 5. reference to (chloride) ions not {moving out of cells / going into mucus} ; 6. reference to sodium ions moving in ; 7. water does not move out (of cells) / water moves in (to cells) / eq ; 8. by osmosis / eq ; 9. mucus (on cell surface) {is not diluted / becomes thicker / becomes stickier} / eq ; 10. (thickened mucus) cannot be moved by {cilia / coughing} ; 	max (5)
b)(i)	<ol style="list-style-type: none"> 1. idea that mucus {traps / eq} {bacteria / pathogens} ; 2. idea that {bacteria / mucus containing the bacteria} cannot be removed (by cilia); 3. idea that mucus provides conditions for bacteria to {live / grow / develop / eq} ; 4. reference to antibodies not being effective ; 5. reference to trauma caused by coughing ; 6. idea that resident {phagocytes / macrophages} cannot destroy bacteria ; 	max (2)

CHERRY HILL TUITION EDEXCEL (B) BIOLOGY AS PAPER 10 MARK SCHEME

b)(ii)	<ol style="list-style-type: none"> 1. {increase / eq} with age ; 2. (increases) {from 0 to 25 / up to 25} ; 3. {constant / eq} 25 to 35 ; 4. {decreases / eq} 35 to 45 ; 5. credit correct manipulation of figures ; 	max (3)
b)(iii)	<ol style="list-style-type: none"> 1. Overall increase in P and decrease in S ; 2. At 0 more S than P / between 0 and 7 years S is greater than P ; 3. After 7 years P is greater than S ; 4. S starts to decrease at year 15 but P {decreases at 35 years / continues to increase} ; 5. Maximum P is greater than maximum S ; 6. S {stays constant / is at its highest} between 10 and 15 years but P {stays constant / is at its highest} between 25 and 35 years ; 	max (2)
7)		
a)(i)	<p>Any two from:</p> <p>genetic, diet qualified, increasing age, male, high blood pressure, smoking, {inactivity / lack of exercise / eq} ;</p>	(1)
a)(ii)	<ol style="list-style-type: none"> 1. idea that it makes the {results / data / study} {representative / reliable} ; 2. idea that there are {many potential risk factors / large variation between individuals} ; 3. idea that side effects more likely to show up ; 	max (2)
b)	<p>same treatment method as for drug S e.g. solvent used for drug S / saline / water / sugar tablet / empty capsule / eq ;</p>	(1)
c)	<p>idea that {CVD is not an immediate disease / side effects may take time to become apparent / need to see if drug works over a long time} ;</p>	(1)
d)	<ol style="list-style-type: none"> 1. the number of {deaths / all events / eq} is {similar to / no higher than / less than} placebo group ; 2. Credit correct manipulation of figures ; 	(2)

8)

(a) (i)	<ol style="list-style-type: none"> 1. group on diet Q loses more mass (overall in the 6 months) / eq ; 2. both groups lost mass in the first { 2 / 6 } months ; 3. the group on diet Q {lost the most mass / lost mass the fastest} in the first 2 months ; 4. between 2 and 6 months there was {no more loss of mass / slight increase in mass} in the group on diet P AND those on diet Q lost more mass / eq ; 5. credit correct manipulation of figures to compare mass loss between two of the groups ; 	(3)
(a) (ii)	not following the diet {anymore / so strictly} / not doing so much exercise / eq ;	(1)
(a)(iii)	<p>Any two from:</p> <ol style="list-style-type: none"> 1. gender / eq ; 2. age / eq ; 3. extent to which individuals were over-weight / eq ; 4. occupation / eq ; 5. alcohol intake / eq ; 6. standardised exercise programme / amount of exercise taken eq ; 7. health / disability / stress / eq ; 8. timing of meals / eq ; 9. time of weighing / eq ; 	(2)
b)	<ol style="list-style-type: none"> 1. idea that exercise uses energy ; 2. the {longer / more intense} the exercise, the more {energy used / weight loss} / eq ; 3. idea of {mass / weight} loss depends on energy input lower than energy output ; 4. idea that exercise increases metabolism / muscles use more energy than fat ; 	(3)