

Question Number	Answer	Mark
1(a)(i)	B ;	(1)

Question Number	Answer	Mark
1(a)(ii)	A ;	(1)

Question Number	Answer	Additional guidance	Mark
1(b)	1. (right) atrium has less muscle / eq ; 2. idea that thickness is related to blood pressure required ; 3. right atrium pumps blood to (right) ventricle / eq ; 4. right ventricle pumps blood to lungs / eq ;	2. ACCEPT reference to distance blood is pumped or strength of contraction required.  4. ACCEPT into pulmonary artery	(3)

Question Number	Answer	Additional guidance	Mark									
1(c)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Stage of cardiac cycle</th> <th>Valves X</th> <th>Valves Y</th> </tr> </thead> <tbody> <tr> <td>Atrial systole</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">x ;</td> </tr> <tr> <td>Diastole</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">x ;</td> </tr> </tbody> </table>	Stage of cardiac cycle	Valves X	Valves Y	Atrial systole	✓	x ;	Diastole	✓	x ;		(2)
Stage of cardiac cycle	Valves X	Valves Y										
Atrial systole	✓	x ;										
Diastole	✓	x ;										

Question Number	Answer	Additional guidance	Mark
1(d)(i)	$0.95^2 / 0.90$ ; $\times 3.14 = 2.83$ ;	Correct answer = 2 marks  ACCEPT 2.8 / 2.834	(2)

Question Number	Answer	Additional guidance	Mark
1(d)(ii)	<ol style="list-style-type: none"> <li>1. reference to elastic fibres;</li> <li>2. allow stretching to accommodate higher pressure / allow recoil to maintain pressure / eq ;</li> <li>3. reference to folded endothelium ;</li> <li>4. allow stretching to accommodate higher pressure / eq ;</li> <li>5. reference to (smooth) muscle ;</li> <li>6. idea that muscle can {contract / exert pressure / eq} ;</li> <li>7. reference to smooth {lining / endothelium / eq} ;</li> <li>8. reduce {friction / resistance to blood flow / eq} ;</li> <li>9. reference to narrow lumen ;</li> <li>10. to maintain (high) blood pressure ;</li> <li>11. reference to collagen ;</li> <li>12. idea that it avoids {rupture / damage / eq} ;</li> </ol>	Linked points – Maximum of 2 marks for structures. Function must be linked to relevant structure.	(3)

Question Number	Answer	Additional guidance	Mark
2(a)	<ol style="list-style-type: none"> <li>1. lower blood cholesterol / eq ;</li> <li>2. idea of inhibition of cholesterol synthesis in liver ;</li> <li>3. reduce risk of CVD / eq ;</li> </ol>	3. ACCEPT atherosclerosis, fatty plaques, atheroma	(2)

Question Number	Answer	Additional guidance	Mark
2(b)(i)	<ol style="list-style-type: none"> <li>1. idea that statins seen as more effective / more aware of the benefits / eq ;</li> <li>2. may be prescribed (more frequently) as a preventative measure to reduce risk of further CVD / eq ;</li> <li>3. specific reference to cheaper / off-patent statins available / eq ;</li> <li>4. perception of lower risks / more awareness of the risks / eq ;</li> </ol>		(2)

Question Number	Answer	Additional guidance	Mark
2(b)(ii)	<ol style="list-style-type: none"> <li>1. use of both increased over three years / eq ;</li> <li>2. greater increase in use of antihypertensives than in platelet inhibitory drugs / eq ;</li> <li>3. the use of platelet inhibitory drugs is (always) greater than antihypertensives / eq ;</li> <li>4. comparative manipulation of data ;</li> </ol>		(3)

Question Number	Answer	Additional guidance	Mark
2(c)(i)	<ol style="list-style-type: none"> <li>1. prevents platelets becoming { activated / sticky } / eq ;</li> <li>2. prevent the formation of a { blood clot / thrombus / embolism / eq } / eq ;</li> <li>3. specific example e.g. stroke ;</li> </ol>	<ol style="list-style-type: none"> <li>1. ACCEPT effectiveness of platelets reduced / idea that clotting factors { not synthesised / inhibited / eq }</li> <li>2. IGNORE 'thin the blood' ACCEPT prevents blood clotting</li> <li>3. IGNORE CVD ACCEPT idea that (risk of) blood vessels becoming blocked is reduced</li> </ol>	<b>(2)</b>

Question Number	Answer	Additional guidance	Mark
2(c)(ii)	<ol style="list-style-type: none"> <li>1. reduce blood pressure / eq ;</li> <li>2. reduces heart rate / eq ;</li> <li>3. prevent muscles in vessel walls contracting / eq ;</li> <li>4. by acting on (sympathetic) nervous system / eq ;</li> </ol>		<b>(2)</b>

Question Number	Answer	Additional guidance	Mark
3(a)(i)	to (help) standardise health of sample group / eq OR to (help) standardise risk of {CVD / stroke / heart attack / eq} in sample group / eq OR idea that it increases confidence that any CVD developed during the period of the investigation ;	ACCEPT to keep variables constant	(1)

Question Number	Answer	Additional guidance	Mark
3(a)(ii)	1. (to allow researchers to) select people with similar levels of {activity / lifestyle / risk factors / eq} ; 2. (to allow researchers to) select people with similar medical history ; 3. (to allow researchers to) [idea of] collecting information about television viewing without singling that out ;	1. ACCEPT take into account / eliminate other factors that cause CVD	(2)

Question Number	Answer	Additional guidance	Mark
3(b)(i)	1. idea that some are indicators of obesity e.g. BMI ; 2. (most are) risk factors for CVD / eq ; 3. HDL cholesterol lowers (CVD) risk / eq ; 4. reference to ratio of LDL:HDL ; 5. idea that this is data that can be measured during the investigation to show increased risk of CVD ;		(2)

Question Number	Answer	Additional guidance	Mark
3(b)(ii)	1. data is quantitative ; 2. health professionals trained ; 3. health professionals less biased ; 4. (idea that) participants may over or underestimate ; 5. questionnaire data relies on remembering events / medical history etc accurately ;	5. ACCEPT idea of inaccurate untruthful answers to questionnaire	(3)

Question Number	Answer	Additional guidance	Mark
<b>3(c)</b>	1. reference to bias ; 2. drug company may have an interest in showing a strong link ; 3. TV manufacturer may have an interest in showing a weak link ;		<b>(2)</b>

Question Number	Answer	Additional guidance	Mark
<b>3(d)</b>	[No] 1. correlation does not show causation / eq ; 2. some other (risk) factor may be involved / eq ; 3. example of risk factor e.g. diet, smoking ; 4. idea that sitting watching television is lack of exercise / sitting reading a book would be similar risk ;	1. CCEPT not a causal relationship	<b>(3)</b>

Question Number	Answer	Additional Guidance	Mark
4(a)	<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>	NB: allow phonetic spelling <ol style="list-style-type: none"> <li>1. CCEPT thrombocytes</li> <li>2. ACCEPT enzyme if not given in Mp3</li> <li>3. ACCEPT thromboplastin if not given in Mp2</li> </ol>	(5)

Question Number	Answer	Additional Guidance	Mark
4(b) (i)	<ol style="list-style-type: none"> <li>1. central carbon with {R / H / eq} and H attached by single bonds ;</li> <li>2. {NH<sub>2</sub> / NH<sub>3</sub><sup>+</sup>} attached to a carbon by single bond ;</li> <li>3. {COOH / COO<sup>-</sup>} attached to a carbon by single bond ;</li> </ol>	Mp1 Must show C, H and R or a plausible R-group  MP2 and 3 ACCEPT groups attached to a central C that is not shown (chemical notation) ACCEPT groups written wrong way round e.g. C-H <sub>2</sub> N NOT incorrect bonding within groups if shown e.g. C=OH ACCEPT if correct group attached to wrong molecule e.g. glucose	(3)

Question Number	Answer	Additional Guidance	Mark
4(b) (ii)	peptide (bond) ;	ACCEPT peptide link NOT polypeptide or dipeptide	(1)

Question Number	Answer	Additional Guidance	Mark
4(b) (iii)	<ol style="list-style-type: none"> <li>1. Idea that fibrinogen is globular and fibrin is fibrous ;</li> <li>2. fibrinogen is soluble and fibrin is insoluble ;</li> <li>3. Idea that they are different sizes ;</li> </ol>	ACCEPT marks to be pieced together across the response. NB: answers must be comparative e.g. fibrin is fibrous fibrinogen is not  <ol style="list-style-type: none"> <li>1. CCEPT fibrinogen globular and fibrin (long) strand or chain.</li> <li>3. CCEPT fibrinogen is {smaller / larger / more amino acids} than fibrin</li> </ol>	(2)