The Cardiovascular System - Mark Scheme

Q1.

Question Number	Acceptable Answer	Additional guidance	Mark
(a)(i)	C		(1)

Question Number	Acceptable Answer	Additional guidance	Mark
(a)(ii)	C		(1)

Question Number	Acceptable Answer	Additional guidance	Mark
(a)(iii)	one cycle = 0.72 s (1) 60 ÷ 0.72 = 83.3 (1)	Allow ± 0.02 s for the duration of the cycle Allow full marks for the correct answer, no working	(2)

Question Number	Acceptable Answer	Additional guidance	Mark
(b)(i)	0.19 s / 0.91 s (1)	Allow ± 0.01 s	(1)

Question Number	Acceptable Answer	Additional guidance	Mark
(b)(ii)	An explanation that makes reference to the following: ventricle needs to contract and force blood into the {aorta / pulmonary artery / arteries} (1) so valves need to close to prevent backflow into the atria on contraction (1)		(2)

Q2.

Question Number	Answer	Additional Guidance	Mark
(i)	A (aorta)		(1)

Question Number	Answer	Additional Guidance	Mark
(ii)	B (P → R → Q → S)		(1)

Question Number	Answer	Additional Guidance	Mark
(iii)	D (R and S)		(1)

Q3.

Question number	Answer	Additional guidance	Mark
	An explanation that makes reference to three of the following points: • pressure increases in the ventricles (1) • greater pressure (in the ventricles) than in the { atria / arteries } (1) • causing atrioventricular valves to close (1) • causing the semilunar valves to open / forcing blood into the arteries (1)	IGNORE reference to events during atrial systole	(3)

Q4.

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

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

Question Number	Answer	Additional guidance	Mark
(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
(c)	<table><tr><th>Stage of cardiac cycle</th><th>Valves Y</th><th>Valves Z</th></tr><tr><td>Atrial systole</td><td>✓</td><td>x ;</td></tr><tr><td>Diastole</td><td>✓</td><td>x ;</td></tr></table>		(2)

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

Question Number	Answer	Additional guidance	Mark
(d)(ii)	1. reference to elastic fibres; 2. allow stretching to accommodate higher pressure / allow recoil to maintain pressure / eq ; 3. reference to folded endothelium ; 4. allow stretching to accommodate higher pressure / eq ; 5. reference to (smooth) muscle ; 6. idea that muscle can {contract / exert pressure / eq} ; 7. reference to smooth {lining / endothelium / eq} ; 8. reduce {friction / resistance to blood flow / eq} ; 9. reference to narrow lumen ; 10. to maintain (high) blood pressure ; 11. reference to collagen ; 12. idea that it avoids {rupture / damage / eq} ;	Linked points – Maximum of 2 marks for structures. Function must be linked to relevant structure.	(3)