

**AQA, OCR, Edexcel**

**A Level**

# **A Level Biology**

The Heart and Circulatory  
Answers

Name:

**M M E**

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Total Marks: /34

Answer				Marks
1. a) i) Movement of fluid in one direction  ii)				1 mark
	Type	Away/Towards	Characteristics	
A	ARTERY	AWAY	Large proportion of muscle and elastic tissue in the walls	
B	VEIN	TOWARDS	-Wide lumen -valves -less elastic and muscle	
C	ARTERIOLE	AWAY	-smaller, branched arteries -much narrower -muscular walls	8 marks
D	CAPILLARIES	AWAY	The membrane is only one cell thick so there is a very short diffusion pathway.	
iii) – The heart causes high pressure in the arteries - The elastic tissue helps to regulate pressure -Smooth muscle helps to redistribute blood/ vasoconstriction, vasodilatation.				2 marks
iv) Forces blood to flow in one direction/ prevents back flow of blood.				1 mark
b) i) – Heart and lungs - Heart and rest of the body				2 marks

<p>2. A)</p> <p>i) – Left ventricle          - Ventricles have a thick muscular wall to contract more powerfully          - Contracts from bottom, pushing blood up and out/ into aorta.</p> <p>ii) C - Vena Cava          D - Aorta          E – Pulmonary Artery          F - Pulmonary Vein</p> <p>b) i) – The volume decreases          - The pressure increases</p> <p>ii) – Blood is forced through the atrioventricular valves          - Ventricles fill with blood</p> <p>iii) – the increase in pressure causes the atrioventricular valves to close          - Semilunar valves are forced open as the pressure is higher in the ventricles than the aorta/pulmonary artery          - Blood is forced out of the ventricles into the aorta and pulmonary artery</p> <p>c)</p> <p>i) Volume of blood pumped per heart beat</p> <p>ii) stroke volume = <math>125\text{cm}^3</math>          (1 mark for answer, 1 mark for correct unit)</p> <p>d)</p> <p>i) A – Ventricles relaxed (ventricular diastole) and atria contracted (atrial systole).          B – Ventricles contract and atria relax          C – Ventricles relaxed and atria contracted</p>	<p>3 marks</p> <p>4 marks</p> <p>2 marks</p> <p>2 marks</p> <p>3 marks</p> <p>1 mark</p> <p>2 marks</p> <p>3 marks</p>
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