

Higher Combined version — Higher Tier (★) included; Separate-only (◆) removed.

**Q1. Explain why the left ventricle has thicker walls than the right ventricle.**

[2 marks]

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**Q2. Compare arteries, veins and capillaries in terms of structure and function.**

[4 marks]

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★ HIGHER TIER

**Q3. ★ A patient has heart rate 70 bpm and stroke volume 80 cm<sup>3</sup>. Calculate cardiac output.**

[2 marks]

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**Total: 8 marks**

**Q1 (2 marks)**

*Explain why the left ventricle has thicker walls than the right ventricle.*

- Left ventricle pumps blood to the whole body — much longer circuit [1]
- Needs to generate higher pressure — thicker walls contract more forcefully [1]

**Q2 (4 marks)**

*Compare arteries, veins and capillaries in terms of structure and function.*

- Arteries: thick elastic walls, small lumen — withstand high pressure from heart [1]
- Veins: valves, large lumen — prevent backflow, low pressure [1]
- Capillaries: one cell thick — minimal diffusion distance for exchange [1]
- Capillaries: dense network — close to every cell [1]

**Q3 (2 marks) [★ HT]**

*★ A patient has heart rate 70 bpm and stroke volume 80 cm<sup>3</sup>. Calculate cardiac output.*

- $70 \times 80 = 5600 \text{ cm}^3/\text{min}$  [1]
- $= 5.6 \text{ dm}^3/\text{min}$  [1]