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

Q1. Explain why the mammalian circulation is called a double circulatory system.

[3 marks]

Q2. Compare arteries and veins. Link each structural feature to its function.

[3 marks]

★ HIGHER TIER

Q3. ★ A patient's heart rate is 72 bpm with stroke volume of 75 cm^3. Calculate cardiac output in dm^3/min.

[2 marks]

Total: 8 marks

Q1 (3 marks)

Explain why the mammalian circulation is called a double circulatory system.

- Right side pumps deoxygenated blood to lungs (pulmonary circulation) [1]
- Left side pumps oxygenated blood to body (systemic circulation) [1]
- Two separate circuits — prevents mixing of oxygenated and deoxygenated blood [1]

Q2 (3 marks)

Compare arteries and veins. Link each structural feature to its function.

- Arteries: thick elastic walls — withstand and smooth high pressure from heart [1]
- Veins: valves — prevent backflow of low-pressure blood [1]
- Arteries: narrow lumen maintains pressure; veins: wide lumen reduces resistance [1]

Q3 (2 marks) [★ HT]

★ A patient's heart rate is 72 bpm with stroke volume of 75 cm³. Calculate cardiac output …

- 72 × 75 = 5400 cm³/min [1]
- = 5.4 dm³/min [1]