This is the **Foundation Separate** version. Higher Tier (★) questions have been removed. All remaining questions are Foundation-level.

The Heart and Blood Vessels (8.1–8.3)

Specification reference: 8.1

Q1. Explain why the mammalian heart is described as a double pump.

[3 marks]

Q2. Compare the structure of arteries, veins and capillaries. Explain how each structure is suited to its function.

[4 marks]

Gas Exchange and Digestion (8.4–8.10)

Specification reference: 8.4

Q3. Explain how the alveoli are adapted for efficient gas exchange.

[4 marks]

Q4. Describe how villi are adapted for absorption of nutrients in the small intestine.

[4 marks]

Total: 15 marks

The Heart and Blood Vessels (8.1–8.3)

Q1 (3 marks)

Explain why the mammalian heart is described as a double pump.

- The right side pumps deoxygenated blood to the lungs (pulmonary circulation) [1]
- The left side pumps oxygenated blood to the body (systemic circulation) [1]
- The two circuits are completely separate — prevents mixing of oxygenated and deoxygenated blood [1]

Q2 (4 marks)

Compare the structure of arteries, veins and capillaries. Explain how each struc…

- Arteries: thick elastic/muscular walls — withstand high pressure blood from heart [1]
- Veins: valves — prevent backflow of low-pressure blood [1]
- Capillaries: one cell thick — minimises diffusion distance for exchange of O■, CO■, glucose [1]
- Capillaries: extensive network — brings exchange surfaces close to every cell [1]

Gas Exchange and Digestion (8.4–8.10)

Q3 (4 marks)

Explain how the alveoli are adapted for efficient gas exchange.

- Large total surface area (millions of alveoli) — maximises area for diffusion [1]
- Thin walls (one cell thick) — minimises diffusion distance [1]
- Dense capillary network — maintains steep concentration gradient by continuously removing O■ [1]
- Moist lining — gases dissolve before diffusing through membrane [1]

Q4 (4 marks)

Describe how villi are adapted for absorption of nutrients in the small intestin…

- Finger-like projections increase surface area massively [1]
- Microvilli on surface of cells further increase surface area [1]
- Thin walls (one cell thick) — short diffusion distance [1]
- Rich blood capillary supply — maintains steep concentration gradient, removes absorbed nutrients rapidly [1]