This is the **Foundation Combined Science** version. Only Foundation-level content is included. Higher Tier and Separate-only questions have been removed.

The Circulatory System (B2a)

Specification reference: B2a

Q1. Explain why the left ventricle has a much thicker muscular wall than the right ventricle.

[3 marks]

Q2. Describe the adaptations of capillaries that make them suited for exchange of substances with tissues.

[3 marks]

Q3. Describe the four components of blood and the function of each.

[4 marks]

Plant Transport (B2b)

Specification reference: B2b

Q4. Describe the difference between transpiration and translocation.

[3 marks]

Q5. Describe how THREE factors affect the rate of transpiration. Explain the mechanism in each case.

[4 marks]

Total: 17 marks

The Circulatory System (B2a)

Q1 (3 marks)

Explain why the left ventricle has a much thicker muscular wall than the right v…

- Left ventricle pumps oxygenated blood to the whole body (systemic circulation) [1]
- The body is a much greater distance than the lungs — requires much higher pressure [1]
- Thicker muscle wall contracts more forcefully, generating the required higher pressure [1]

Q2 (3 marks)

Describe the adaptations of capillaries that make them suited for exchange of su…

- Walls are one cell thick — minimises diffusion distance [1]
- Large total surface area — maximises exchange rate [1]
- Located very close to all body cells — minimises distance substances must travel [1]

Q3 (4 marks)

Describe the four components of blood and the function of each.

- Red blood cells: no nucleus, biconcave, contain haemoglobin — carry O■ [1]
- White blood cells: phagocytes engulf pathogens; lymphocytes produce antibodies [1]
- Plasma: liquid that carries dissolved substances (glucose, hormones, CO■, urea) [1]
- Platelets: cell fragments that form blood clots at wound sites [1]

Plant Transport (B2b)

Q4 (3 marks)

Describe the difference between transpiration and translocation.

- Transpiration: evaporation of water from leaves through stomata; drives water movement up xylem [1]
- Translocation: transport of dissolved sugars (sucrose) in phloem from leaves to rest of plant [1]
- Transpiration is one-way upward; translocation can be in any direction [1]

Q5 (4 marks)

Describe how THREE factors affect the rate of transpiration. Explain the mechani…

- Temperature: higher temp → more evaporation from cells → steeper concentration gradient for water vapour → faster rate [1]
- Light intensity: more light → stomata open wider → more water vapour can escape [1]
- Humidity: lower humidity → steeper concentration gradient between leaf and air → faster diffusion of water vapour [1]
- Wind speed: removes water vapour from near leaf surface → maintains steep gradient [1] — any three with explanation