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

Endocrine System and Blood Glucose (7.1–7.5)

Specification reference: 7.1

Q1. Explain how blood glucose concentration is restored to normal when it falls below the set point.

[4 marks]

Q2. Compare Type 1 and Type 2 diabetes. Explain why each requires different management.

[4 marks]

Thermoregulation (7.6)

Specification reference: 7.6

Q3. Describe how the body responds when core temperature rises above 37°C. Explain the mechanism of each response.

[4 marks]

Kidney Function (7.7–7.9)

Specification reference: 7.7

Q4. A patient's kidneys have failed. Explain how dialysis maintains the composition of their blood.

[3 marks]

Total: 15 marks

Endocrine System and Blood Glucose (7.1–7.5)

Q1 (4 marks)

Explain how blood glucose concentration is restored to normal when it falls belo…

- Alpha cells in pancreas detect low blood glucose [1]
- Glucagon released into blood [1]
- Glucagon causes liver to break down glycogen → glucose (glycogenolysis) [1]
- Glucose released into blood → concentration rises back to normal level [1]

Q2 (4 marks)

Compare Type 1 and Type 2 diabetes. Explain why each requires different manageme…

- Type 1: autoimmune — no insulin produced → blood glucose uncontrolled → requires insulin injections to survive [1+1]
- Type 2: cells resistant to insulin → glucose stays in blood → managed with diet, exercise and weight loss because some insulin still produced [1+1]

Thermoregulation (7.6)

Q3 (4 marks)

Describe how the body responds when core temperature rises above 37°C. Explain t…

- Sweating: water evaporates from skin surface → removes latent heat → cools body [1]
- Vasodilation: arterioles near skin widen → more blood flows near surface → more heat radiated [1]
- Hairs lie flat: reduces trapped insulating air layer → increases heat loss [1]
- All coordinated by hypothalamus detecting temperature of blood [1]

Kidney Function (7.7–7.9)

Q4 (3 marks)

A patient's kidneys have failed. Explain how dialysis maintains the composition …

- Blood passed through dialysis machine across a partially permeable membrane [1]
- Dialysis fluid on other side contains same concentration of useful substances (glucose, ions) as normal blood [1]
- Excess urea, water and ions move from blood to dialysis fluid by diffusion/osmosis — blood composition restored [1]