

AQA GCSE Biology: Blood Glucose (HIGHER TIER ONLY)

Name: _____

Target Grade: _____

Section 1: The Negative Feedback Cycle

1. Explain the concept of 'Negative Feedback' in relation to the control of blood glucose concentration. (3 marks)

Section 2: Detailed Biochemistry

2. When blood glucose is high, insulin stimulates the liver. Describe the specific conversion that occurs and name the product. (2 marks)

3. Glucagon is released during periods of low blood glucose. Explain how this hormone interacts with the liver to restore homeostasis. (3 marks)

Section 3: Evaluation and Analysis

4. A patient has a fasting blood glucose level of 9.5 mmol/L. Evaluate whether this patient is likely to have Type 1 or Type 2 diabetes, and suggest a diagnostic test to confirm this. (4 marks)

HIGHER TIER MARK SCHEME

Q1: A change in the system (glucose rise/fall) is detected (1); a response is triggered to reverse the change (1); levels are returned to the optimum/normal range (1).

Q2: Soluble glucose is converted into insoluble glycogen (1); for storage in the liver/muscles (1).

Q3: Pancreas detects low glucose and secretes glucagon (1); Glucagon triggers the liver to convert stored glycogen back into glucose (1); Glucose is released into the blood via diffusion (1).

Q4: The level is high, indicating diabetes (1); Type 1 if the pancreas produces no insulin OR Type 2 if cells are resistant (1); Confirm via a Glucose Tolerance Test (1); Measure blood glucose over time after a set sugar intake (1).