

AQA, OCR, Edexcel

A Level

A Level Biology

**Control of Blood Glucose
Questions**

Name:

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Total Marks: /36

Control of Blood Glucose

All cells in an organism need energy in order to carry out cellular processes. This energy comes in the form of glucose. There is usually around 100mg per 100 cm³ of glucose in the blood of a healthy human and this concentration is carefully controlled by the body.

1. Blood glucose concentration rises after consuming carbohydrates and falls as a result of the body exercising.
 - a) The hormonal system controls the level of glucose in the body.
 - i) Identify which organ controls blood glucose concentration and suggest which cells within the organ are responsible for this. (3 marks)
 - ii) How does insulin decrease the level of blood glucose? (3 marks)
 - iii) Complete the table below to explain the terms of processes that occur in blood glucose control and where they happen in the body. (6 marks)

Control Process	Explanation	Where it occurs
Glycogenesis		
Gluconeogenesis		
Glycogenolysis		

b) Control of blood glucose is one example of how the body maintains homeostatic control of its internal environment to ensure that all cell processes are carried out efficiently.

i) Explain how the control of blood glucose and how this is an example of a negative feedback mechanism. (9 marks)

c) The image below shows a cheetah chasing a gazelle.



i) How is the production of adrenaline advantageous to both the cheetah and the gazelle in the situation above with relation to blood glucose levels? (4 marks)

ii) Explain how adrenaline activates glycogenolysis inside cells after binding to receptors on the outside of the cell. (3 marks)

2. Diabetes mellitus is a condition where the body's blood glucose level cannot be controlled properly. There are two different types of diabetes.

a) i) Explain the terms hyperglycaemic and hypoglycaemic. (2 marks)

ii) Explain the differences between Type 1 Diabetes and Type 2 Diabetes making reference to how they develop, affect the body and how they are treated. (6 marks)