Question 38 (11 marks)

Type I diabetes affects around 120,000 Australians. It is caused when the body’s own immune system attacks the body’s own cells and prevents parts of the endocrine system from functioning normally.

1. Insulin is protein based hormone. Explain how they work. (3 marks) **protein locks on to a receptor protein on outside of cell membrane (1) causes secondary messenger substance to diffuse through cell (1) and activate a particular enzyme/ Brings about a change inside the cell cytoplasm/. (1)**
2. Describe how insulin controls glucose levels in the body. (3 marks)

When glucose levels are too high,

Insulin causes liver to remove glucose from blood and convert to glycogen (1),

Too high causes body cells to remove glucose from blood and store as glycogen (1) Too high causes excess glucose to be removed and stored as fat in the fat cells (1) OR accelerates glucose uptake into cells (1)

accelerates the conversion of glucose to glycogen(1) [glycogenesis] accelerates the conversion of glucose to fat (1) [gluconeogenesis]

***Any suitable three***

1. One of the major concerns for a person suffering from Type I diabetes is becoming hyperglycaemic if they consume too much sugar.
2. Describe two symptoms that a person would exhibit if they were hyperglycaemic?

(2 marks) Blurry vision, difficulty concentrating, frequent urination, headaches, increased fatigue, thirsty. *Any two*

1. (3 marks)

Glucose levels low detected by alpha cells in pancreas (1) Glucagon is secreted (1)

Glycogenolysis (1) to increase blood glucose levels

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