

Name _____

The Endocrine System's Balancing Act: Understanding Feedback Mechanisms

Open-Ended Response Answer Key

1. Negative feedback helps maintain hormonal balance in the body by preventing excessive hormone production. For example, when blood glucose levels rise, insulin is released to promote glucose uptake by cells, leading to decreased blood glucose levels and inhibition of further insulin secretion.
2. An example of positive feedback in the endocrine system is childbirth. During childbirth, the hormone oxytocin stimulates uterine contractions, which in turn trigger the release of more oxytocin, intensifying contractions until the baby is delivered. This positive feedback loop helps ensure the progression of labor.
3. The pancreas plays a crucial role in feedback mechanisms related to blood glucose regulation. When blood glucose levels rise after a meal, the pancreas releases insulin, which promotes glucose uptake by cells. Conversely, when blood glucose levels decrease, the pancreas releases glucagon, which stimulates the liver to release glucose into the bloodstream.
4. Disruptions in feedback mechanisms can lead to health problems such as hormonal imbalances, diabetes, thyroid disorders, or reproductive issues. For example, dysfunction in negative feedback mechanisms controlling insulin secretion can lead to diabetes mellitus, characterized by high blood glucose levels.

