

HUMAN ENDOCRINE SYSTEM ANSWERS

1. (a) Substances, mostly proteins, produced in cells in one part of the body are transported by the blood or lymph to target cells in other parts of the body where they regulate and coordinate their activities (b) Ductless organs which secrete hormones into the blood or lymph

2. (a) thyroid gland; increases metabolic rate (b) beta cells of Islets of Langerhans in the pancreas; increases glucose utilisation by muscle and other cells, decreases blood glucose concentration, increases glycogen storage and metabolism of glucose (c) alpha cells in the Islets of Langerhans in the pancreas; stimulates conversion of liver glycogen to blood glucose (d) medulla of adrenal gland; reinforces action of sympathetic nerves, stimulates breakdown of liver and muscle glycogen (e) anterior pituitary gland; controls bone growth and general body growth, affects protein fat and carbohydrate metabolism (f) testis; stimulates development and maintenance of male sexual characteristics (g) ovary; stimulates development of female sexual characteristics and regulates menstrual cycle (h) ovary; regulates menstrual cycle

3. The pituitary gland is located in the brain and produces many hormones, including the growth hormone, which regulate other hormones in the body.

4. Homeostasis is the tendency to maintain stability or uniformity in an organism's internal environment. An internal balance is maintained of body temperature, and of chemicals such as water, glucose, urea, salts and carbon dioxide.

5. Feedback.

6. Negative feedback mechanisms are the most common. They are stimulus-response mechanisms in which the response produced decreases the original stimulus. For example, if the human body temperature rises above 37°C, the response is sweating to lower the body temperature back to normal.

Positive feedback mechanisms are those in which the stimulus causes a change that increases, rather than decreases, the original stimulus. An example of positive feedback is shivering to increase body temperature.