

# UNIT 7 - ENDOCRINE SYSTEM

## ACTIVITY - Endocrine System Concept Review

Name \_\_\_\_\_ Period \_\_\_\_\_

- 1 Explain why the thyroid gland enlarges in response to an iodine deficiency in the diet.
2. A patient with a cancerous tumor has a thyroidectomy. What effect does the thyroidectomy have on the blood levels of T3, T4, calcitonin, and TSH?
3. Alterations in blood levels of sodium and potassium have profound effects on the electrical properties of cells. Since high levels of aldosterone cause retention of sodium and excretion of potassium, predict and explain the effect of high aldosterone on nervous, muscular, and circulatory function..
4. Explain why the increase in insulin secretion in response to parasympathetic stimulation is consistent with the maintenance of homeostasis.
5. Compare the regulation of glucagon and insulin secretion after a meal high in carbohydrates and after fasting for eight hours.
6. Explain how the secretion of estrogens from the ovaries and testosterone from the testes is controlled.

## **ACTIVITY - The Endocrine System Concept Review Questions-KEY**

- 1. The thyroid gland enlarges in response to an iodine deficiency in the diet because the thyroid gland requires the use of iodine in order to make its hormones. When iodine is not present, the stimulation of the thyroid cells by the pituitary gland hormone TSH causes an enlargement of those cells.*
- 2. If a patient had the thyroid gland removed, the levels of the thyroid hormones (T3, T4, and calcitonin) would drop because they would no longer be produced. The level of TSH from the pituitary gland would rise in response to the low thyroid hormone levels in an attempt to try to increase the production of the thyroid hormones.*
- 3. Due to high levels of sodium and low levels of potassium, nerve impulse conduction might be impaired which would, in turn, affect muscle contraction. In the circulatory system, for those patients who are sensitive to sodium, high blood pressure may result. A definite side effect would be water retention.*
- 4. The role of the parasympathetic division is to return the body to homeostasis after the stress has passed. During times of stress, the hormone cortisol functions to increase blood sugar. When restoring homeostasis, the high blood sugar level must be dropped to a lower level – which is insulin's role.*
- 5. After eating a meal high in carbohydrates, insulin would be produced to lower blood sugar levels by facilitating the diffusion of glucose into the body's cells, the formation of glycogen, and the formation of adipose tissue. When the body has not received food in many hours, the blood sugar levels drop. Glucagon raises those blood sugar levels by stimulating the break down glycogen found in the liver and the muscles.*
- 6. When the levels of estrogens or the levels of testosterone decrease, FSH from the pituitary gland is stimulated to in turn stimulate the ovaries and the testes to produce more of the estrogens and the testosterone.*