Endocrine System: The Actions of Hormones on Target Cells

1. The receptor is activated by the input signal that is the _____.
   This signal causes a biochemical change in the cell. Name three of the five possible changes listed.

   _____

   _____

   _____

2. Water soluble proteins such as _____ and _____ bind to receptors located where on the cell? _____

3. G proteins:
   -What is bound to the G protein in the inactive state? _____ In the active state? _____
   -What catalyzes the conversion of ATP to cAMP? _____ _____
   -What is known as the first messenger? _____Second messenger? _____
   -A molecule of cAMP activates _____ _____ __, which can phosphorylate many proteins.
   -A single molecule of a hormone can have a large effect on the cell due to this process called _____.
   -What is the enzyme that inactivates cAMP? _____

4. Insulin:
   -Insulin decreases plasma glucose, amino acids and fatty acids by stimulating the conversion of them to their storage form. Name these storage forms.

   glucose → _____
   amino acids → _____
   fatty acids → _____

   - Conversion to the storage form is known as _____ metabolism.
   -After a meal, high levels of glucose, amino acids and fatty acids lead to a/an (decrease or increase) in insulin secretion.
   -The autonomic nervous system also regulates insulin secretion. What effects would the sympathetic and parasympathetic system have on insulin secretion?

   Sympathetic → _____
   Parasympathetic → _____

   -Insulin travels in the blood and binds to what type of receptors on the cell membrane? _____
   -What is the approximate half-life of insulin? _____
   -What hormone increases plasma glucose levels? _____ This hormone breaks down the storage forms and this is known as _____ metabolism.

5. Diabetes:

-Type (1 or 2) diabetes is characterized by a resistance of the target cells to insulin. Plasma insulin levels are normal or high.

-In type 1 diabetes, the lack of insulin and glycogenolysis in the liver leads to (hypoglycemia or hyperglycemia).

- With the increase in filtration of glucose at the kidneys the carriers become _____ and glucose appears in the urine, also known as _____.

-Glucose acts as an _____ _____ leading to increased urine flow.

-Increased lipolysis produces an increase in _____ _____ which when used as fuel produces _____.

- The presence of these in plasma and urine is known respectively as _____ and _____.

6. -Lipid soluble hormones such as _____ and _____ hormone bind to receptors located _____.

-Once the hormone binds to the receptor, the _____ dissociates from the receptor complex.

-The hormone receptor complexes act as _____ _____.

-The receptor-hormone complex then binds to _____.

-The mRNA produces _____ that catalyze biochemical reactions in the cell.

7. Cortisol is classified as a _____ hormone. Name 4 major actions of Cortisol.

_____ _____

_____ _____

These actions are important for the stress response.

8. The main function of thyroid hormones is: _____.

Three other specific functions include:

_____

_____

_____