

# Anatomy & A&P 17 Endocrine System Essay

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## 4. Chapter: A&P 17 Endocrine System Essay

### 1. A&P 17 Endocrine System Essay Questions

4.1.1. Visit this link (<http://openstaxcollege.org/l/hormonebind>) to watch...

Author: OpenStax College

Visit this link (<http://openstaxcollege.org/l/hormonebind>) to watch an animation of the events that occur when a hormone binds to a cell membrane receptor.

What is the secondary messenger made by adenylyl cyclase during the activation of liver cells by epinephrine?

- cAMP

Check the answer of this question online at QuizOver.com:

Question: [Visit this link http://openstaxcollege](http://openstaxcollege.org/l/hormonebind) OpenStax College Anatomy Quest

4.1.2. Visit this link (<http://openstaxcollege.org/l/roleofhypo>) to watch ...

Author: OpenStax College

Visit this link (<http://openstaxcollege.org/l/roleofhypo>) to watch an animation showing the role of the hypothalamus and the pituitary gland.

Which hormone is released by the pituitary to stimulate the thyroid gland?

- Thyroid-stimulating hormone.

Check the answer of this question online at QuizOver.com:

Question: [Visit this link http://openstaxcollege](http://openstaxcollege.org/l/roleofhypo) OpenStax College Anatomy Quest

4.1.3. Visit this link (<http://openstaxcollege.org/l/adrenalglands>) to vie...

Author: OpenStax College

Visit this link (<http://openstaxcollege.org/l/adrenalglands>) to view an animation describing the location and function of the adrenal glands.

Which hormone produced by the adrenal glands is responsible for mobilization of energy stores?

- Cortisol.

Check the answer of this question online at QuizOver.com:

Question: [Visit this link http://openstaxcollege](http://openstaxcollege.org/l/adrenalglands) OpenStax College Anatomy Quest



4.1.4. Visit this link (<http://openstaxcollege.org/l/melatonin>) to view an...

Author: OpenStax College

Visit this link (<http://openstaxcollege.org/l/melatonin>) to view an animation describing the function of the hormone melatonin.

What should you avoid doing in the middle of your sleep cycle that would lower melatonin?

- Turning on the lights.

Check the answer of this question online at QuizOver.com:

Question: [Visit this link http://openstaxcollege](http://openstaxcollege.org/l/melatonin) OpenStax College Anatomy Quest

4.1.5. Visit this link (<http://openstaxcollege.org/l/pancreas1>) to view an...

Author: OpenStax College

Visit this link (<http://openstaxcollege.org/l/pancreas1>) to view an animation describing the location and function of the pancreas.

What goes wrong in the function of insulin in type 2 diabetes?

- Insulin is overproduced.

Check the answer of this question online at QuizOver.com:

Question: [Visit this link http://openstaxcollege](http://openstaxcollege.org/l/pancreas1) OpenStax College Anatomy Quest

#### 4.1.6. Describe several main differences in the communication methods used...

Author: OpenStax College

Describe several main differences in the communication methods used by the endocrine system and the nervous system.

- The endocrine system uses chemical signals called hormones to convey information from one part of the body to a distant part of the body.  
Hormones are released from the endocrine cell into the extracellular environment, but then travel in the bloodstream to target tissues.  
This communication and response can take seconds to days.  
In contrast, neurons transmit electrical signals along their axons.  
At the axon terminal, the electrical signal prompts the release of a chemical signal called a neurotransmitter that carries the message across the synaptic cleft to elicit a response in the neighboring cell.  
This method of communication is nearly instantaneous, of very brief duration, and is highly specific.

Check the answer of this question online at [QuizOver.com](http://www.quizover.com):

Question: [Describe several main differences in the OpenStax College Anatomy](#)

#### 4.1.7. Compare and contrast endocrine and exocrine glands.

Author: OpenStax College

Compare and contrast endocrine and exocrine glands.

- Endocrine glands are ductless. They release their secretion into the surrounding fluid, from which it enters the bloodstream or lymph to travel to distant cells. Moreover, the secretions of endocrine glands are hormones. Exocrine glands release their secretions through a duct that delivers the secretion to the target location. Moreover, the secretions of exocrine glands are not hormones, but compounds that have an immediate physiologic function. For example, pancreatic juice contains enzymes that help digest food.

Check the answer of this question online at QuizOver.com:

Question: [Compare and contrast endocrine and exocrine OpenStax College Anatomy](#)

#### 4.1.8. True or false: Neurotransmitters are a special class of paracrines....

Author: OpenStax College

True or false: Neurotransmitters are a special class of paracrines. Explain your answer.

- True. Neurotransmitters can be classified as paracrines because, upon their release from a neuron's axon terminals, they travel across a microscopically small cleft to exert their effect on a nearby neuron or muscle cell.

Check the answer of this question online at QuizOver.com:

Question: [True or false: Neurotransmitters are a OpenStax College Anatomy Quest](#)

#### 4.1.9. Compare and contrast the signaling events involved with the second ...

Author: OpenStax College

Compare and contrast the signaling events involved with the second messengers cAMP and IP3.

- In both cAMP and IP3-calcium signaling, a hormone binds to a cell membrane hormone receptor that is coupled to a G protein.  
The G protein becomes activated when the hormone binds.  
In the case of cAMP signaling, the activated G protein activates adenylyl cyclase, which causes ATP to be converted to cAMP.  
This second messenger can then initiate other signaling events, such as a phosphorylation cascade.  
In the case of IP3-calcium signaling, the activated G protein activates phospholipase C, which cleaves a membrane phospholipid compound into DAG and IP3.  
IP3 causes the release of calcium, another second messenger, from intracellular stores. This causes further signaling events.

Check the answer of this question online at [QuizOver.com](http://www.quizover.com):

Question: [Compare and contrast the signaling events OpenStax College Anatomy](#)



#### 4.1.10. Describe the mechanism of hormone response resulting from the bindi...

Author: OpenStax College

Describe the mechanism of hormone response resulting from the binding of a hormone with an intracellular receptor.

- An intracellular hormone receptor is located within the cell.  
A hydrophobic hormone diffuses through the cell membrane and binds to the intracellular hormone receptor, which may be in the cytosol or in the cell nucleus.  
This hormone-receptor complex binds to a segment of DNA. This initiates the transcription of a target gene, the end result of which is protein assembly and the hormonal response.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [Describe the mechanism of hormone response OpenStax College Anatomy](#)

#### 4.1.11. Compare and contrast the anatomical relationship of the anterior an...

Author: OpenStax College

Compare and contrast the anatomical relationship of the anterior and posterior lobes of the pituitary gland to the hypothalamus.

- The anterior lobe of the pituitary gland is connected to the hypothalamus by vasculature, which allows regulating hormones from the hypothalamus to travel to the anterior pituitary. In contrast, the posterior lobe is connected to the hypothalamus by a bridge of nerve axons called the hypothalamic-hypophyseal tract, along which the hypothalamus sends hormones produced by hypothalamic nerve cell bodies to the posterior pituitary for storage and release into the circulation.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [Compare and contrast the anatomical OpenStax College Anatomy Quest](#)

#### 4.1.12. Name the target tissues for prolactin.

Author: OpenStax College

Name the target tissues for prolactin.

- The mammary glands are the target tissues for prolactin.

Check the answer of this question online at QuizOver.com:

Question: [Name the target tissues for prolactin. OpenStax College Anatomy Quest](#)

#### 4.1.13. Explain why maternal iodine deficiency might lead to neurological i...

Author: OpenStax College

Explain why maternal iodine deficiency might lead to neurological impairment in the fetus.

- Iodine deficiency in a pregnant woman would also deprive the fetus. Iodine is required for the synthesis of thyroid hormones, which contribute to fetal growth and development, including maturation of the nervous system. Insufficient amounts would impair these functions.

Check the answer of this question online at QuizOver.com:

Question: [Explain why maternal iodine deficiency OpenStax College Anatomy Quest](#)

#### 4.1.14. Define hyperthyroidism and explain why one of its symptoms is weigh...

Author: OpenStax College

Define hyperthyroidism and explain why one of its symptoms is weight loss.

- Hyperthyroidism is an abnormally elevated blood level of thyroid hormones due to an overproduction of T3 and T4.

An individual with hyperthyroidism is likely to lose weight because one of the primary roles of thyroid hormones is to increase the body's basal metabolic rate, increasing the breakdown of nutrients and the production of ATP.

Check the answer of this question online at QuizOver.com:

Question: [Define hyperthyroidism and explain why OpenStax College Anatomy Quest](#)

#### 4.1.15. Describe the role of negative feedback in the function of the parat...

Author: OpenStax College

Describe the role of negative feedback in the function of the parathyroid gland.

- The production and secretion of PTH is regulated by a negative feedback loop. Low blood calcium levels initiate the production and secretion of PTH. PTH increases bone resorption, calcium absorption from the intestines, and calcium reabsorption by the kidneys. As a result, blood calcium levels begin to rise. This, in turn, inhibits the further production and secretion of PTH.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [Describe the role of negative feedback in OpenStax College Anatomy](#)



#### 4.1.16. Explain why someone with a parathyroid gland tumor might develop ki...

Author: OpenStax College

Explain why someone with a parathyroid gland tumor might develop kidney stones.

- A parathyroid gland tumor can prompt hypersecretion of PTH. This can raise blood calcium levels so excessively that calcium deposits begin to accumulate throughout the body, including in the kidney tubules, where they are referred to as kidney stones.

Check the answer of this question online at QuizOver.com:

Question: [Explain why someone with a parathyroid OpenStax College Anatomy Quest](#)

#### 4.1.17. What are the three regions of the adrenal cortex and what hormones ...

Author: OpenStax College

What are the three regions of the adrenal cortex and what hormones do they produce?

- The outer region is the zona glomerulosa, which produces mineralocorticoids such as aldosterone; the next region is the zona fasciculata, which produces glucocorticoids such as cortisol; the inner region is the zona reticularis, which produces androgens.

Check the answer of this question online at QuizOver.com:

Question: [What are the three regions of the adrenal OpenStax College Anatomy](#)

#### 4.1.18. If innervation to the adrenal medulla were disrupted, what would be...

Author: OpenStax College

If innervation to the adrenal medulla were disrupted, what would be the physiological outcome?

- Damage to the innervation of the adrenal medulla would prevent the adrenal glands from responding to the hypothalamus during the fight-or-flight response.  
Therefore, the response would be reduced.

Check the answer of this question online at [QuizOver.com](http://www.quizover.com):

Question: [If innervation to the adrenal medulla were OpenStax College Anatomy](#)

#### 4.1.19. Compare and contrast the short-term and long-term stress response.

Author: OpenStax College

Compare and contrast the short-term and long-term stress response.

- The short-term stress response involves the hormones epinephrine and norepinephrine, which work to increase the oxygen supply to organs important for extreme muscular action such as the brain, lungs, and muscles.  
In the long-term stress response, the hormone cortisol is involved in catabolism of glycogen stores, proteins, and triglycerides, glucose and ketone synthesis, and downregulation of the immune system.

Check the answer of this question online at QuizOver.com:

Question: [Compare and contrast the short-term and OpenStax College Anatomy](#)

#### 4.1.20. Seasonal affective disorder (SAD) is a mood disorder characterized ...

Author: OpenStax College

Seasonal affective disorder (SAD) is a mood disorder characterized by, among other symptoms, increased appetite, sluggishness, and increased sleepiness.

It occurs most commonly during the winter months, especially in regions with long winter nights.

Propose a role for melatonin in SAD and a possible non-drug therapy.

- SAD is thought to occur in part because low levels and duration of sunlight allow excessive and prolonged secretion of melatonin.

Light therapy-daytime exposure to very bright lighting-is one common therapy.

Check the answer of this question online at QuizOver.com:

Question: [Seasonal affective disorder SAD is a mood OpenStax College Anatomy](#)

#### 4.1.21. Retinitis pigmentosa (RP) is a disease that causes deterioration of...

Author: OpenStax College

Retinitis pigmentosa (RP) is a disease that causes deterioration of the retinas of the eyes.

Describe the impact RP would have on melatonin levels.

- The retina is important for melatonin production because it senses light. Bright light inhibits the production of melatonin, whereas low light levels promote the production of melatonin. Therefore, deterioration of the retinas would most likely disturb the sleep-wake pattern because melatonin production would be elevated.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [Retinitis pigmentosa RP is a disease that OpenStax College Anatomy](#)



#### 4.1.22. Compare and contrast the role of estrogens and progesterone.

Author: OpenStax College

Compare and contrast the role of estrogens and progesterone.

- Both estrogens and progesterone are steroid hormones produced by the ovaries that help regulate the menstrual cycle.  
Estrogens play an important role in the development of the female reproductive tract and secondary sex characteristics.  
They also help maintain pregnancy. Progesterone prepares the body for pregnancy and helps maintain pregnancy.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [Compare and contrast the role of estrogens OpenStax College Anatomy](#)

#### 4.1.23. Describe the role of placental secretion of relaxin in preparation ...

Author: OpenStax College

Describe the role of placental secretion of relaxin in preparation for childbirth.

- Relaxin produced by the placenta is thought to soften and widen the pubic symphysis. This increases the size of the pelvic outlet, the birth canal through which the fetus passes during vaginal childbirth.

Check the answer of this question online at QuizOver.com:

Question: [Describe the role of placental secretion OpenStax College Anatomy](#)

#### 4.1.24. What would be the physiological consequence of a disease that destr...

Author: OpenStax College

What would be the physiological consequence of a disease that destroyed the beta cells of the pancreas?

- The beta cells produce the hormone insulin, which is important in the regulation of blood glucose levels. All insulin-dependent cells of the body require insulin in order to take up glucose from the bloodstream. Destruction of the beta cells would result in an inability to produce and secrete insulin, leading to abnormally high blood glucose levels and the disease called type 1 diabetes mellitus.

Check the answer of this question online at QuizOver.com:

Question: [What would be the physiological consequence OpenStax College Anatomy](#)

#### 4.1.25. Why is foot care extremely important for people with diabetes melli...

Author: OpenStax College

Why is foot care extremely important for people with diabetes mellitus?

- Excessive blood glucose levels damage the blood vessels and nerves of the body's extremities, increasing the risk for injury, infection, and tissue death.  
Loss of sensation to the feet means that a diabetic patient will not be able to feel foot trauma, such as from ill-fitting shoes.  
Even minor injuries commonly lead to infection, which , can progress to tissue death without proper care, requiring amputation.

Check the answer of this question online at [QuizOver.com](http://www.quizover.com):

Question: [Why is foot care extremely important for OpenStax College Anatomy](#)

#### 4.1.26. Summarize the role of GI tract hormones following a meal.

Author: OpenStax College

Summarize the role of GI tract hormones following a meal.

- The presence of food in the GI tract stimulates the release of hormones that aid in digestion. For example, gastrin is secreted in response to stomach distention and causes the release of hydrochloric acid in the stomach. Secretin is secreted when acidic chyme enters the small intestine, and stimulates the release of pancreatic bicarbonate. In the presence of fat and protein in the duodenum, CCK stimulates the release of pancreatic digestive enzymes and bile from the gallbladder. Other GI tract hormones aid in glucose metabolism and other functions.

Check the answer of this question online at QuizOver.com:

Question: [Summarize the role of GI tract hormones OpenStax College Anatomy](#)

#### 4.1.27. Compare and contrast the thymus gland in infancy and adulthood.

Author: OpenStax College

Compare and contrast the thymus gland in infancy and adulthood.

- The thymus gland is important for the development and maturation of T cells. During infancy and early childhood, the thymus gland is large and very active, as the immune system is still developing. During adulthood, the thymus gland atrophies because the immune system is already developed.

Check the answer of this question online at QuizOver.com:

Question: [Compare and contrast the thymus gland in OpenStax College Anatomy](#)

#### 4.1.28. Distinguish between the effects of menopause and andropause on fert...

Author: OpenStax College

Distinguish between the effects of menopause and andropause on fertility.

- Menopause occurs as the result of a progressive decline in the function of the ovaries, resulting in low estrogen and progesterone levels. Ovulation ceases, and postmenopausal woman can no longer conceive a child. In contrast, andropause is a much more gradual and subtle decline in testosterone levels and functioning. A man typically maintains fertility until very old age, although the quantity, quality, and motility of the sperm he produces may be reduced.

Check the answer of this question online at [QuizOver.com](http://QuizOver.com):

Question: [Distinguish between the effects of menopause OpenStax College Anatomy](#)