# A & P 2 –Unit 6 Review/Practice Test

## Mary StanglerCenter for Academic Success

***This review is meant to highlight basic concepts from Unit 6. It does not cover all concepts presented by your instructor. Refer back to your notes, unit objectives, labs, handouts, etc. to further prepare for your exam.***

**Endocrine System**

**Multiple Choice:**

1. Produce and secrete hormones into the bloodstream.
   A. Hormones
   B. Endocrine glands
   C. The Endocrine system
   D. Target cells

2. Chemical messengers secreted by endocrine glands, and transported by the bloodstream are
   A. Hormones
   B. Endocrine glands
   C. Endocrine system
   D. Target cells

3. When a hormone is released it will have its effect at…
   A. The synaptic cleft
   B. Only a neighboring cell
   C. The neuromuscular junction
   D. A target cell

4. All the cells, tissues, and glands that secrete hormones are called
   A. Hormones
   B. Endocrine glands
   C. the Endocrine system
   D. Target cells

**True or False**: For each statement, circle True or False.

| | | |
|---|---|---|
| True | False | 1. Endocrine communications use gap junctions in the cell membrane to allow chemicals, nutrients, and electrolytes to move between cells of the same type. |
| True | False | 2. During paracrine hormone communication, chemical signals secreted by the cells diffuse through tissues fluid to signal nearby cells |
| True | False | 3. When direct communication occurs, chemical messengers secreted by glands travel in the bloodstream to other (“far away”) tissues and organs. |
| True | False | 4. Endocrine hormones may affect many tissues and organs, simultaneously. |

**Matching exercise:** Match a term from the word bank to the correct sentence (some terms may be used more than once).

| | | |
|---|---|---|
| Nervous system | Endocrine system | Both Nervous and Endocrine system |

1. Receives signals that change has occurred or is occurring in the body.
2. Uses both electrical and chemical signals
3. Only uses chemical signals
4. Responds fast and also stops responding very quickly
5. Responds slowly and also stops responding slowly, with effects that can conceivably continue for days or weeks
6. Uses both negative and positive feedback
7. Has a widespread area of effect, which can affect many organs
8. Effect is localized usually only affecting one organ
9. Works to bring the body back to homeostasis

**Essay Question**: Compare lipid and protein hormones, explain what they are made of, how they travel in the blood and how they get into a target cell.

_____

_____

**Multiple Choice:**

1. What is the term for a small amount of hormone, causing a large effect on target cells by using a reaction cascade?
   A. Down-regulation
   B. Hormone amplification
   C. Up-regulation
   D. Antagonistic effect

2. What is it called when hormone levels in the bloodstream can cause the target cells to decrease their number of receptors?
   A. Down-regulation
   B. Hormone amplification
   C. Up-regulation
   D. Antagonistic effect

3. What is the term for one hormone having the opposite effect on another hormone?
   A. Down-regulation
   B. Hormone amplification
   C. Synergistic effect

D. Antagonistic effect

4. What is it called when low hormonal levels in the bloodstream cause target cells to increase their number of receptors?
   A. Down-regulation
   B. Hormone amplification
   C. Up-regulation
   D. Antagonistic effect

5. What is it called when multiple hormones act together to produce a desired product?
   A. Permissive effect
   B. Hormone amplification
   C. Synergistic effect
   D. Antagonistic effect

6. What is it called when the first hormone enhances a target cell's response to a second hormone?
   A. Permissive effect
   B. Hormone amplification
   C. Synergistic effect
   D. Antagonistic effect

**True or False**: For each statement, circle True or False.

| | | |
|---|---|---|
| True | False | 1. A hormones half-life is the time required to remove 50% of the hormone from the bloodstream. |
| True | False | 2. Protein hormones are bound and are protected from breakdown by utilizing transport proteins in the bloodstream. |
| True | False | 3. Lipid hormones have a longer half-life and slower clearance. |
| True | False | 4. Lipid hormones are free (unbound) hormones and are not protected from breakdown. |
| True | False | 5. Enzymes of the blood, liver, and kidneys can easily breakdown protein hormones, therefore the hormones have a shorter half-life. |
| True | False | 6. A hormone's signal is "turned off" when they have served their purpose. |
| True | False | 7. Lipid hormones have a shorter half-life, which means faster clearance from the blood. |
| True | False | 8. Protein hormones are hydrophobic and do not mix easily with blood plasma |
| True | False | 9. Lipid hormones are hydrophilic and mix easily with blood plasma |

True False 10. Target cells have hormone receptors, which are proteins that bind to specific hormones

**Matching exercise:** Match a term from the word bank to the correct sentence (some terms may be used more than once).

| | | | | |
|---|---|---|---|---|
| Hypothalamus | Anterior Pituitary | Posterior Pituitary | Pineal Gland | Thymus |
| Thyroid Gland | Parathyroid Gland | Adrenal Cortex | Adrenal Medulla | Pancreas |
| Ovaries | Testes | | | |

1. This gland is the inner core of the adrenal gland (inner 10-20%)
2. This gland is a spongy organ which is located retroperitoneal and inferior/posterior to the stomach.
3. This gland's hormones include estrogen, progesterone, inhibin
4. This gland is the outer 80-90% of the adrenal gland.
5. This gland controls the hormones responsible for "fight or flight" in response to fear, pain, or other stresses.
6. This gland's hormone increases blood calcium levels, and decreases bone calcium level by stimulating osteoclasts
7. This gland produces and secretes 3 classes of corticosteroids; mineralocorticoids (aldosterone), glucocorticoids (cortisol, hydrocortisone, corticosterone), and sex steroids (estrogen, testosterone)
8. These are 4 small glands embedded in the posterior side of the thyroid gland.
9. This gland is stimulated by ACTH from the anterior pituitary
10. This gland contains the Islets of Langerhans, which are cell clusters (1-2 million) that produce hormones.
11. This gland is inferior and lateral to the larynx
12. This gland's hormones include testosterone and inhibin
13. This gland's hormones increases metabolism, heart rate, and respiration rate.
14. This gland secretes Calcitonin, which decreases calcium levels in the blood, and increases calcium uptake from the bones by stimulating osteoblasts.
15. This gland secretes thymosin, which stimulates the development of lymphatic organs and the development of T-cells (WBCs important in immune defense)
16. This gland secretes melatonin at night, and helps regulate circadian rhythms.
17. This gland doesn't produce hormones, it stores and releases two hypothalamic produced hormones OXT and ADH
18. This gland is the funnel shaped "master-switch" of the endocrine system
19. This gland secretes "stimulating" hormones like ACTH, FSH/LH, GH, TSH, PRL.
20. This gland is larger in infants and children, and is smaller in adults.
21. This gland secretes "releasing" hormones like CRH, GnRh, GHIH, TRH, PIH

22. This gland has a direct pipeline for hormones from the Hypothalamus called the Hypophyseal Portal System

**Essay Question**: Use TRH and TSH to describe how the endocrine system uses negative feedback to maintain homeostasis.

**Multiple Choice:**

1. This disorder is caused by the hypersecretion of growth hormone (GH) from the anterior pituitary before bone growth plates close.
   A. Graves Disease
   B. Pituitary Dwarfism
   C. Acromegaly
   Gigantism

2. This disorder is an autoimmune disease in which antibodies mimic TSH.
   A. Graves Disease
   B. Pituitary Dwarfism
   C. Acromegaly
   D. Gigantism

3. This disorder is caused by the hypersecretion of growth hormone (GH) from the anterior pituitary after the growth plates have closed, and continues throughout life.
   A. Graves Disease
   B. Pituitary Dwarfism
   C. Acromegaly
   D. Gigantism

4. This disorder is caused by the hyposecretion of Growth Hormone (GH) from the Anterior Pituitary.
   A. Graves Disease
   B. Pituitary Dwarfism
   C. Acromegaly
   D. Gigantism

5. This disorder is caused by the hyposecretion of ADH from the posterior pituitary.
   A. Type I Diabetes Mellitus
   B. Type II Diabetes Mellitus
   C. Diabetes Insipidus
   D. Hypothyroidism

6. This disorder causes excessive urination (polyuria), in which the urine doesn't have excess glucose.
   A. Type I Diabetes Mellitus

B. Type II Diabetes Mellitus
C. Diabetes Insipidus
D. Hypothyroidism

7. This disorder is caused by the pancreas failing to produce sufficient amount of insulin.
   A. Type I Diabetes Mellitus
   B. Type II Diabetes Mellitus
   C. Diabetes Insipidus
   D. Hypothyroidism

8. In this disorder functional insulin is produced by the pancreas, but the body cells don't respond to it.
   A. Type I Diabetes Mellitus
   B. Type II Diabetes Mellitus
   C. Diabetes Insipidus
   D. Hypothyroidism

**Fill in the blank**

1. The disorder that is caused by the hypersecretion of ACTH from the anterior pituitary which then causes the hypersecretion of glucocorticoids/cortisol by the adrenal cortex is called _ _____.

2. The disorder that is an enlargement of the thyroid gland due to dietary iodine deficiency is called _ _____.

3. The disorder that is caused by the hyposecretion of the steroid hormones by the adrenal cortex, and causes electrolyte imbalances, hypotension, severe dehydration, hypoglycemia and weakness, weight loss, decreased stress resistance, and hyperpigmentation of skin and mucosal membranes is called _ _____.

**Lymphatic System**
**Multiple Choice:**

1. The circulatory vessels that return lymph back into the blood stream is/are called the
   A. Lymphatic trunks
   B. Thoracic ducts
   C. Subclavian veins
   D. Terminal lymphatics

2. The endothelium lining of a lymphatic capillary is called the
   A. Valves
   B. Tunica Media
   C. Tunica Externa
   D. Tunica Interna

3. Lymphatic capillaries of the small intestines that absorb dietary lipids are called
   A. Fenestrated capillaries
   B. Lacteals

C. Peyer's patches
D. MALT

4. The smooth muscle layer of a lymphatic vessel is called the
   A. Tunica Media
   B. Tunica Externa
   C. Tunica Interna
   D. Lacteals

5. The connective tissue layer of a lymphatic vessel is called the
   A. Tunica Media
   B. Tunica Externa
   C. Tunica Interna
   D. Lacteals

6. The immune system protects the body from:
   A. Bacteria
   B. Viruses
   C. Cancerous cells
   D. All the above

**True or False:** For each statement, circle True or False.

True False 1. The lymphatic system includes organs that recover lymph, inspects it for pathogens and returns it back into the bloodstream.

True False 2. The immune system is a group of organs that activate an immune response. **Not an organ system per se**

True False 3. The immune system is not a group of organs; it is the collection of WBC's in all organs.

True False 4. Lymph is tissue fluid, which is recovered from between cells.

True False 5. Lymphatic cells transport lymph.

True False 6. 85% of lymph is reabsorbed directly into blood capillaries.

True False 7. RBCs in the lymph nodes activate immune cell response.

True False 8. Lymphatic capillaries have valves that keep lymph traveling away from tissues and prevent backflow.

**Matching exercise**: Match a term from the word bank to the correct sentence (some terms may be used more than once).

Lymphatic Capillaries  Lymphatic vessels  Lymphatic trunks  Right lymphatic duct

Thoracic duct  Subclavian veins

1. These/this receives lymph from the left side of the head, neck, and thorax, left arm, and entire lower body below the diaphragm.
2. These/this receives lymph from the major portions of the body including jugular, subclavian, bronchomediastinal, intercostal, intestinal and lumbar.
3. These/this go through the lymph nodes
4. These/this empties into the left subclavian vein
5. These/this collects lymph from between cells
6. These/this drains into the right subclavian vein
7. These/this begins as a large sac in the abdomen called the cisterna chili

**Essay Question:** Explain the various mechanisms of lymph flow throughout the body.

**Multiple Choice:**

1. The lymphatic organ(s) where B cells and T cells are born, and where B cells become immunocompetent
   A. Lymph nodes
   B. Tonsils
   C. Red bone marrow
   D. All of the above

2. The lymphatic organ(s) that house populations of immunocompetent cells
   A  Lymph nodes
   B  Tonsils
   C.  Spleen
   D. All of the above

3. The lymphatic organ(s) where T cells become immunocompetent
   A. Lymph nodes
   B. Tonsils
   C. Thymus
   D. All of the above

4. Lymphatic tissue that has lymphocytes scattered rather than clustered in mucous membranes are called
   A. GALT
   B. MALT
   C. BALT
   D. Peyer's patches

5. Lymphatic tissues that have dense masses of lymphocytes and macrophages in the form of nodules in the ileum, tonsils and appendix are
   A. GALT
   B. MALT
   C. BALT
   D. Peyer's patches

**Matching exercise**:Match a term from the word bank to the correct sentence (some terms may be used more than once).

| | | | | |
|---|---|---|---|---|
| Cervical lymph node | Axillary lymph node | Thoracic lymph node | Abdominal lymph node | Intestinal & mesenteric lymph nodes |
| Inguinal lymph node | Popliteal lymph node | | | |

1. Monitors lymph from the urinary track and reproductive system
2. Monitors lymph from the lower leg below the knee
3. Monitors lymph from the head and neck.
4. Monitors lymph from the mediastinum and lungs
5. Monitors lymph from the upper limb and breast
6. Monitors lymph from the digestive tract
7. Monitors lymph from entire lower limb

**Fill in the blank:**

1. The _____ tonsil is a single tonsil on the wall or the nasopharnyx.
2. The _____ tonsil is a pair of tonsils at the back of the oral cavity.
3. The _____ tonsil is a pair of tonsils at the base of the tongue.
4. The _____ tonsil is most often infected.
5. The largest lymphatic organ is the _____.
6. The lymphatic system disorder that causes swelling due to accumulation of lymph in tissue especially in the legs, scrotum of men and breasts of women is called _____.

**NonSpecific Defenses**

**True or False:** For each statement, circle True or False.

| | | |
|---|---|---|
| True | False | 1. Physical barriers like the skin, mucous membranes, and subepithelial tissues are the 1st line of defense. |
| True | False | 2. A pathogen-specific response like WBCs that defeat pathogens and confer immunity is part of the 2nd line of defense. |
| True | False | 3. Fever, inflammation, antimicrobial plasma proteins and immune surveillance are part of the 2nd line of defense. |
| True | False | 4. Non-specific responses, which work the same way every time, is part of the 3rd line of defense. |

True False 5. The 3rd line of defense guards against a broad range of pathogens.

**Multiple Choice:**

9. Skin does not support microbial growth because it contains
   A. Keratin
   B. Defensins
   C. Acid Mantle
   D. All of the above

10. The viscous, sticky, gel-like barrier of the subepithelial areolar tissue is called
   A. Lysozymes
   B. Mucus
   C Defensins
   D. Hyaluronic acid

**Essay Question:** Describe the 4 aspects of the 2nd line of defense i.e. fever, inflammation, antimicrobial plasma proteins, and immune surveillance.

_____

_____

_____

_____

**Fill in the blank:**

1. Fever-producing chemicals which are released by macrophages and neutrophils are called _ _____.
2. Fever reducing medications are called _____.
3. Inflammatory chemicals released by damaged tissue cells, mast cells, and basophils are called _____.
4. The 4 cardinal signs of inflammation are _____.
5. Proteins secreted by virus-infected cells that alert neighboring cell to invasion are called _____.
6. The 2 leukocytes involved in immune surveillance are _____ and _____.

**Pathogen-specific defenses**

**True or False:** For each statement, circle True or False.

True False 1. Pathogen specific defenses respond in the same manner no matter what the pathogen is.

| | | |
|---|---|---|
| True | False | 2. Memory is an integral part of a pathogen-specific response, because it allows fast responses upon re-exposure to the same pathogen |
| True | False | 3. T cells are part of humoral immunity. |
| True | False | 4. T cells are lymphocytes that directly attack and destroy foreign or diseased cells |
| True | False | 5. B cells are part of humoral immunity. |
| True | False | 6. B cells produce antibodies which directly destroy pathogens |
| True | False | 7. T cells are part of cellular immunity |
| True | False | 8. T cells kill body cells that are already infected with pathogens |

**Matching exercise:** Match a term from the word bank to the correct sentence (some terms may be used more than once).

| | | | | |
|---|---|---|---|---|
| Neutrophils | Eosinophils | Basophils | T cells | B cells |
| NK cells | Monocytes | Macrophages | | |

1. **Which leukocytes increases in numbers with a bacterial infection?**
2. Which leukocytes do not directly attack pathogens, but instead release cytokines to attract other leukocytes?
3. Which leukocytes wander through tissues destroying bacteria, and are part of immune surveillance?
4. Which leukocytes are born and mature in bone marrow?
5. Which leukocytes increase in numbers with allergens and parasitic infections?
6. Which leukocytes produce antibodies that can be used for memory against specific pathogens?
7. Which leukocytes are born in the bone marrow, but mature in the thymus?
8. Which leukocytes increase in number with viral infections, and become macrophages when they exit capillaries and enter connective tissue?
9. Which leukocytes wander through connective tissue phagocytizing pathogens and presenting them on their cell surface?

**Fill in the blank**

1. The production of WBCs in the bone marrow is called _____.
2. Granulocytes include _____.
3. Agranulocytes include _____.
4. In cellular immunity _____ promote T cytotoxic cells and B cell activity, as well as nonspecific defense.
5. In cellular immunity _____ cells limit the action of other cells once an infection has been defeated to control immune system response.
6. In cellular immunity _____ cells attack foreign cells and chemicals.
7. In cellular immunity _____ cells are responsible for memory.
8. Antigen presenting cells include _____ and _____.

9. In cellular immunity _____ wander in tissues inspecting antigens on antigen presenting cells.

**Essay Question:** Describe the 3 stages of cellular immunity i.e. recognize, react, and remember.

_____

_____

_____

**Multiple Choice:**

1. The type of immunity that is caused when a fetus gets antibodies through the placenta and infants get antibodies from breast milk is called
   A. Artificial passive
   B. Natural passive
   C. Artificial active
   D. Natural active

2. What type of immunity is produced after someone gets an infection and produces their own antibodies?
   A. Artificial passive
   B. Natural passive
   C. Artificial active
   D. Natural active

3. What type of immunity is developed when someone is injected with antibodies to protect against tetanus or botulism?
   A. Artificial passive
   B. Natural passive
   C. Artificial active
   D. Natural active

4. What type of immunity is caused when someone receives a vaccination which causes them to produce their own antibodies?
   A. Artificial passive
   B. Natural passive
   C. Artificial active
   D. Natural active