

# 10-806-177 Gen Anatomy & Physiology PLA Information and Sample Questions

## PLA Information

This is a PLA (Prior Learning Assessment) to be taken by individuals who wish to earn credit for prior learning for the 10-806-177 General Anatomy & Physiology course.

**Gen Anatomy & Physiology Course Description:** Examines basic concepts of human anatomy and physiology as they relate to health sciences. Using a body systems approach, the course emphasizes the interrelationships between structure and function at the gross and microscopic levels of organization of the entire human body. It is intended to prepare health care professionals who need to apply basic concepts of whole-body anatomy and physiology to informed decision-making and professional communication with colleagues and patients. (This course also provides the foundation, and is prerequisite to, Advanced Anatomy and Physiology.)

**Credits:** 4

**Pre-Assessment Materials Provided:** This PLA exam information, with sample questions, and a course outcome summary are provided for your review.

## Process

1. Review the course competencies listed below and the General Anatomy and Physiology Course Outcome Summary provided by the college.
2. Practice for the exam using the sample questions provided.
3. Follow college procedures to take the PLA exam.

## Exam Details:

- Total number of questions: 150
- Time allowed: 2 hours, 30 min (1 min./question)
- Resources allowed during exam: None
- Attempts allowed: 1

## Additional PLA Requirements per college discretion

## Scoring

You must earn an 80% or higher to pass the assessment and receive credit for prior learning.

## Course Competencies

1. Apply descriptive, anatomical, physiological, and directional terminology to the human body and its organization
2. Classify the major chemical components of living things according to their structure and function
3. Characterize the basic structure and functions of the cell and its parts
4. Identify how cells store and use energy
5. Analyze the role of DNA in controlling cell functions
6. Correlate the structure of tissues with their functions
7. Analyze how components of the integumentary system function in the body
8. Analyze how components of the skeletal system function in the body

9. Analyze how components of the muscular system function in the body
10. Analyze how components of the nervous system function in the body
11. Correlate the major organs of the endocrine system with their function in the body
12. Analyze how components of the cardiovascular system function in the body
13. Analyze how components of the digestive system function in the body
14. Analyze how components of the respiratory system function in the body
15. Analyze how the components of the urinary system function in the body
16. Analyze how components of the reproductive systems function in the body
17. Use appropriate laboratory methods and safety precautions

### Rating Scale

Value	Description
Pass	You have earned a combined exam score of 80% or higher
Fail	You have earned a combined exam score of < 80%

### Scoring Guide

	Criteria	Ratings
	You answer questions correctly to earn a minimum combined score of 80%	Pass    Fail
	Comments:	

## Course Competencies

### Apply descriptive, anatomical, physiological, and directional terminology to the human body and its organization.

#### Learning Objectives

- Distinguish between anatomy and physiology.
- Describe the anatomical position.
- Describe the three major planes of the body or of an organ.
- Identify the major body cavities and their subdivisions.
- Identify the serous membranes that line the walls and cover the organs of each body cavity and the fluid found inside each cavity.
- Describe two ways to subdivide the abdominal region.
- Identify the quadrants of the abdominopelvic cavity.
- Identify the nine abdominal regions.
- Describe the axial and appendicular regions of the body and their subdivisions.
- Use correct directional terms in the study of anatomy and physiology.
- Describe the location of specific body organs.
- Match locating terms with the correct descriptions.
- Match body positions with the correct descriptions.
- Define terms related to organization of the human body.
- Define examples of homeostasis, negative and positive feedback systems.
- Provide examples of homeostasis, negative and positive feedback systems.

### Classify the major chemical components of living things according to their structure and function.

#### Learning Objectives

- Describe the structure of an atom.
- Differentiate among an atom, molecule, compound, ion, and isotopes.
- Describe the various types of chemical bonding.
- List the body's inorganic compounds and their functions.
- Explain the importance of water in living organisms.
- Explain the importance of oxygen and carbon dioxide to living organisms.
- Describe the body's major organic compounds and their functions.
- Define enzymes.
- Describe the role of enzymes in cellular metabolism.

### Characterize the basic structure and functions of the cell and its parts.

#### Learning Objectives

- Define cytoplasm and organelle.
- Describe the structure, function and relationship of all cell organelles.
- Describe the structure of the cell membrane.
- Describe the different modes of transport of substances across cell membranes.

### Illustrate how cells store and use energy.

#### Learning Objectives

- Define metabolism.
- Distinguish between catabolic and anabolic pathways.
- Contrast aerobic and anaerobic respiration.
- Describe the role of mitochondria in cellular metabolism.

### Analyze the role of DNA in controlling cell functions.

#### Learning Objectives

- Describe the structure and function of DNA, RNA, and chromosomes.
- Describe the stages of a cell cycle.
- Relate DNA replication to the cell cycle.

### Correlate the structure of tissues with their functions.

### **Learning Objectives**

- Identify the microscopic anatomy of body tissues.
- List the characteristics of each tissue type.
- List the functions of each tissue type.
- Give examples of the locations of each tissue type in the body.

### **Analyze how components of the integumentary system function in the body.**

#### **Learning Objectives**

- Compare the structures and functions of the layers of the skin.
- Describe the events occurring during keratinization that produce a skin resistant to abrasion and water loss.
- Explain the effects of ultraviolet radiation on the skin.
- Describe the glands of the skin, their secretions and the functions of these secretions, including surface film (acid mantle).
- Describe the way in which the integumentary system helps to regulate body temperature.
- Describe the role of skin in sensation.
- Explain the way in which skin responds to injuries and repairs itself.

### **Analyze how components of the skeletal system function in the body.**

#### **Learning Objectives**

- Describe the functions of the skeletal system.
- Describe the composition and organization of bone matrix.
- List the three types of bone cells and their functions.
- Give examples of each bone classification, according to their shape.
- Describe how the features that characterize spongy and compact bones impact their function.
- Describe bone growth.
- Explain the role of bone in calcium homeostasis.
- Explain how and when bone remodeling occurs.
- Describe the different types of joints and how they work.
- Apply movement terminology to joint functions.
- Identify the components and functions of the axial and appendicular skeleton.
- Relate the major landmarks on individual bones of the skeleton to their function.
- Discuss the process of skull development.
- Identify the differences in structure and function of the various vertebrae.
- Describe the skeletal differences between males and females.

### **Analyze how components of the muscular system function in the body.**

#### **Learning Objectives**

- Describe the characteristics and functions of muscular tissue.
- Explain the organization of muscle at the tissue level.
- Distinguish among the different types of muscle contractions.
- Relate types of muscle fibers to muscular performance.
- Identify the major human skeletal muscles and their actions.
- Define origin, insertion, agonist and antagonist, prime mover and synergist.

## **Analyze how components of the nervous system function in the body.**

### **Learning Objectives**

Describe the anatomical organization and general functions of the nervous system.  
Distinguish between neurons and neuroglia by comparing their structures and functions.  
Explain how the brain and spinal cord are protected.  
Describe the major regions of the brain, their structure and functions.  
Distinguish among the motor, sensory, and association areas of the cerebral cortex.  
Discuss the structure and function of the spinal cord and spinal nerves.  
Explain the role of white matter and gray matter in processing and relaying sensory and motor information.  
Describe the process of a neural reflex.  
Identify the principle sensory and motor pathways.  
Differentiate between the somatic and autonomic divisions based on their respective structures and functions.  
Identify the cranial nerves and their functions.  
Contrast the functions of the sympathetic and parasympathetic divisions of the autonomic nervous system.  
Discuss the receptors and processes involved in the senses of smell and taste.  
Describe the structures of the ear and their roles in the process of hearing.  
Describe the structures and processes involved in maintaining equilibrium.  
Describe the structures of the eye and their functions.  
Explain the mechanism of vision.

## **Correlate the major organs of the endocrine system with their function in the body.**

### **Learning Objectives**

Explain the general functions of the endocrine system.  
Differentiate between the two chemical families of hormones.  
Explain the control mechanisms of hormonal secretion.  
Identify the role of the hypothalamus in the endocrine system.  
Describe the functions and effects of hyposecretion and hypersecretion of major hormones.  
Compare the roles of the endocrine and nervous systems in maintaining homeostasis.  
Describe the endocrine and nervous systems response to stress.

## **Analyze how components of the cardiovascular system function in the body.**

### **Learning Objectives**

Identify the names and locations of the major parts of the heart.  
Explain the function(s) of each of the major parts of the heart.  
Trace the pathway of the blood through the heart and lungs.  
Compare the structures and functions of the major types of blood vessels.  
Describe the mechanisms that aid in returning venous blood to the heart.  
Describe the general characteristics and functions of blood.  
Distinguish among the types and functions of the formed elements of the blood.  
Explain the control of red blood cell production.  
Explain the mechanisms that help to achieve hemostasis.  
Define coagulation.  
Describe the basis of blood typing, ABO, Rh compatibility and transfusions.  
Describe the general characteristics and functions of the lymphatic system.  
Describe the location of the major lymphatic pathways.  
Describe the formation of tissue fluid and lymph.  
Explain lymphatic circulation maintenance and the consequences of an obstruction.  
Describe major functions of the lymph nodes, thymus and spleen.  
Define immunity.  
Relate the role of the lymphatic system to immunity.

## **Analyze how components of the digestive system function in the body.**

**Learning Objectives**

Describe the parts and functions of the digestive system organs.

Describe the functions of major digestive enzymes (ex. pepsin, amylase, ptyalin, and lipase).

Describe the mechanisms of swallowing, vomiting, and defecating.

**Analyze how components of the respiratory system function in the body.****Learning Objectives**

Describe the locations, structures and functions of the organs of the respiratory system.

Describe the mechanics of breathing.

Define respiratory air volumes and capacities.

Explain the mechanism of respiratory control and factors that may influence it.

**Analyze how the components of the urinary system function in the body****Learning Objectives**

Illustrate the gross anatomy of the urinary tract.

Describe general functions of the urinary system and its components.

Explain the functional processes of urine formation, including filtration, reabsorption, secretion, and excretion.

**Analyze how components of the reproductive systems function in the body.****Learning Objectives**

Describe the parts and general functions of the male and female reproductive system.

Explain the way in which hormones control the activities of the reproductive organs and the development of secondary sexual characteristics.

Describe the similarities between the male and female reproductive system.

Explain the diploid and haploid cycle in human reproduction.

**Use appropriate laboratory methods and safety precautions.****Learning Objectives**

Explain safety issues and precautions in the lab.

Identify procedure for using scientific equipment.

Review scientific method.

# 10-806-177 Gen Anatomy & Physiology Challenge Exam

## Sample Exam Questions:

The test includes multiple choice and structural identification questions. Here are some sample questions for use as practice. The answers are provided at the end of the question set.

**Multiple Choice: Read the question. Select the best answer choice from the options provided.**

1. Which organic molecule has long hydrocarbon chains and is a major element of cell membranes?
  - a. Polypeptides
  - b. Carbohydrates
  - c. Phospholipids
  - d. Nucleotides
2. Which specialized cell of the skin produces pigment?
  - a. Keratinocyte
  - b. Melanocyte
  - c. Langerhans
  - d. Horny
3. In which structure do sperm mature after they are produced?
  - a. the prostate gland
  - b. the epididymis
  - c. the bulbourethral glands
  - d. the seminal vesicles
4. What hormone is important in milk production and maintaining lactation?
  - a. Estrogen
  - b. Oxytocin
  - c. Prolactin
  - d. Adrenaline
5. Which structure and its secretion are correctly matched?
  - a. prostate – fibrinolysin
  - b. bulbourethral gland – thick, acidic fluid
  - c. epididymis – testosterone
  - d. seminal vesicles – fructose
6. Which layer of the uterus is shed during menstruation?
  - a. Perimetrium
  - b. Myometrium
  - c. Endometrium
  - d. Ectometrium
7. Which of the following is a primary function of the glomerulus?
  - a. Filtration
  - b. Reabsorption
  - c. Secretion
  - d. Transport
8. Trace the flow of blood for a nephron.
  - a. peritubular capillaries, efferent arteriole, glomerulus, afferent arteriole
  - b. efferent arteriole, glomerulus, afferent arteriole, peritubular capillaries
  - c. afferent arteriole, glomerulus, efferent arteriole, peritubular capillaries

- d. afferent arteriole, glomerulus, peritubular capillaries, efferent arteriole
9. Which type of tissue is in the image? (Figure 1)
- Compact bone
  - Fibrocartilage
  - Smooth muscle
  - Simple squamous epithelial

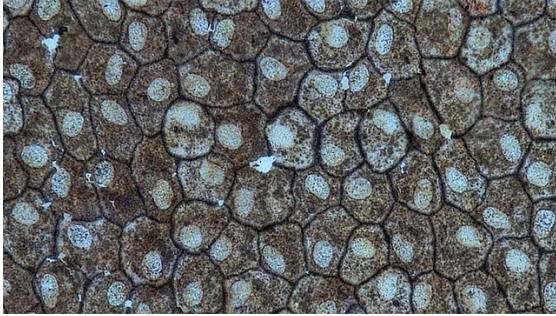


Figure 1

10. Which number in the diagram corresponds to the renal pelvis? (Figure 2)
- 3
  - 7
  - 13
  - 14

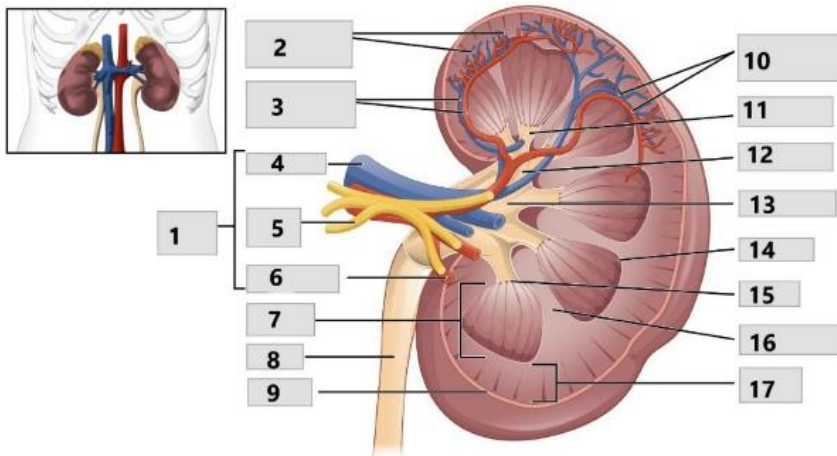


Figure 2

11. Which number represents the medulla oblongata? (Figure 3)
- 1
  - 2
  - 5
  - 8



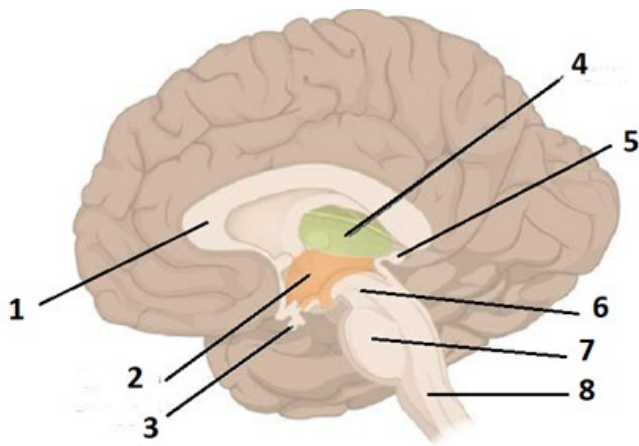


Figure 3

### Sample Question Answers:

1. c, 2. b, 3. b, 4. c, 5. d, 6. c, 7. a, 8. c, 9. d, 10. c, 11. d

#### Image Citation:

Figure 1: "Epithelial Tissues Simple Squamous Epithelium (41722161301)." Berkshire Community College Bioscience Image Library, via Wikimedia Commons.

[https://commons.wikimedia.org/wiki/File:Epithelial\\_Tissues\\_Simple\\_Squamous\\_Epithelium\\_\(41722161301\).jpg](https://commons.wikimedia.org/wiki/File:Epithelial_Tissues_Simple_Squamous_Epithelium_(41722161301).jpg). Accessed 8 Apr. 2021. CC0.

Figure 2: "Figure 25.8 Left Kidney," *Anatomy & Physiology*, OpenStax, [https://openstax.org/books/anatomy-and-physiology/pages/25-3-gross-anatomy-of-the-kidney#fig-ch26\\_03\\_02](https://openstax.org/books/anatomy-and-physiology/pages/25-3-gross-anatomy-of-the-kidney#fig-ch26_03_02). Accessed 17 Mar. 2021. CC BY.

Figure 3: "Figure 13.11 The Diencephalon," *Anatomy & Physiology*, OpenStax, <https://openstax.org/books/anatomy-and-physiology/pages/13-2-the-central-nervous-system> Accessed 17 Mar. 2021.