Practice Questions for Midterm 4 – Biology 105

*Match each definition in the first column to the correct term in the second column.*

### CHAPTER 11

1) The fluid that makes up little over half of blood.  
A) Platelets

2) The platelets, white blood cells, and red blood cells in the blood.  
B) Agranulocytes

3) Blood cells that remove wastes, toxins, or damaged cells from the body.  
C) White

4) Also known as erythrocytes, these cells function to carry oxygen and carbon dioxide and to deliver nutrients and waste products throughout the system.  
D) Formed elements

5) Leukocytes that contain granules in the cytoplasm that function to destroy invading bacteria or other pathogens.  
E) Phagocytes

6) Also known as thrombocytes, these function in blood clotting by forming a seal that stops the leak in a vessel.  
F) Plasma

7) Undifferentiated cells that divide and give rise to all formed elements.  
G) Granulocytes

8) A type of white blood cells that lacks granules or has very small granules.  
H) Stem cells

9) Cells that engulf or swallow foreign pathogens or damaged cells.  
I) Red blood cells

### CHAPTER 12

1) Veins that carry oxygenated blood from the lungs to the heart.  
A) Spleen

2) System that consists of both the cardiovascular and the lymphatic systems.  
B) Veins

3) The site where T lymphocytes mature, enabling them to fight specific disease-causing organisms.  
C) Capillaries

4) System that consists of the heart and blood vessels.  
D) Thymus

5) Vessels that carry blood back to the heart from the body.  
E) Aorta

6) The major artery that delivers blood to the body.  
F) Cardiovascular
7) Structures that function to protect the throat against bacteria and foreign agents.  
G) Tonsils

8) Site of lymphocyte production that functions to remove old red blood cells, foreign debris, and microorganisms from the blood.  
H) Circulatory

9) The blood vessels that are the site of gas exchange.  
I) Pulmonary veins

CHAPTER 13
1) Line of defense with the skin barrier as an example.  
A) Phagocytes

2) Small mobile connective tissues cells that along with basophils, release histamine, which causes redness at the site of damage or illness.  
B) Autoimmune disorders

3) Specialized scavenger cells that engulf pathogens, damaged tissue, or dead cells.  
C) Mast cell

4) These occur when the immune system fails to properly identify self from non-self, which results in an attack on the tissues or organs.  
D) Helper T cell

5) Effector T cells responsible for the cell-mediated immune response.  
E) Cytotoxic T cells

6) A T cell that serves as the main switch for the entire immune response after a macrophage introduces the antigen.  
F) Barrier defense

CHAPTER 14
1) The portion of the upper respiratory system that functions to provide the passageway for food and air.  
A) Alveoli

2) These muscles contract to help inflate the lungs by moving the ribs.  
B) Intercostal muscles

3) A sheet muscle that separates the thoracic cavity and abdominal cavity and aids to inflate the lungs during inhalation.  
C) Diaphragm

4) The surfaces where gas is exchanged.  
D) Pharynx

5) The cavities in the head that lighten it and warm and moisten the air.  
E) Sinuses

6) The passageway that connects the larynx with the bronchi  
F) Trachea
leading to each lung.

7) The two branches of the trachea that conduct air from the trachea to each lung.

8) The narrow passageways that conduct air from bronchi to alveoli.

CHAPTER 15
1) This organ is responsible for bile production.

2) This organ in the digestive system functions to store food and break down proteins before transferring chyme to the small intestine.

3) A muscular tube that functions to absorb water, some nutrients, and stores waste material.

4) Three pairs of glands that secrete fluids, moisten and lubricate food, and contain digestive enzymes that hydrolyze starches.

5) This organ helps to regulate blood glucose levels.

6) This organ stores bile before its release into the small intestine.

CHAPTER 16
1) An excretory organ involved with filtration of body fluids and the elimination of nitrogenous wastes.

2) Tube-like structures that are lined with muscle and function to transport urine from the kidneys to the urinary bladder.

3) A muscular tube that transports urine from the urinary bladder to the outside of the body.

4) These are the functional units of the kidney and are responsible for the formation of urine.

5) The elimination of food residues occurs in this system.

6) The elimination of carbon dioxides and water and body heat occurs in this system.

7) The system that eliminates nitrogenous wastes, excess water, salts, and excess ions from the body.
8) Muscular, bag-like structure that stores and aids in the disposal of urine.

H) Digestive

Practice short-answer questions (all mixed-up from the different chapters!)

1.) Trace a drop of blood as it enters the vena cava and travels through the heart and body.

2.) Explain the composition and functions of the arteries.

3.) What function do the veins have and how do these vessels compare with the arteries?

4.) Explain the steps involved in the clotting process.

5.) Explain the ABO blood system and why is it important to fully understand this system when receiving blood transfusions?

6.) Explain why someone with blood type O negative is called the universal donor.

7.) An Rh positive baby can cause the mother to produce antibodies against the Rh antigen if she happens to be Rh negative. Explain how a baby can be Rh positive if the mother is Rh negative?

8.) Briefly explain the first line of defense that prevents pathogens from invading the body.

9.) Lupus is a disease in which the immune system produces antibodies that attach to various tissues throughout the body, which initiates massive inflammation and tissue death. What type of disease is this?

10.) The stomach is an extremely hostile place. What protects it from digesting itself?

11.) Explain the path of the urine from the kidney to excretion. Make sure your explanation includes all structures and muscles that would be encountered as the urine leaves the body.

12.) Describe the pathway through which air travels to the lungs, beginning with the outside environment and continuing all the way to the terminal structures in the lungs.

13.) Describe two examples of proteins found in blood plasma. What are the functions of these proteins?

14.) How do antibodies cause effects in the body? Please describe at least three examples.

15.) How is blood flow through veins accomplished? Please describe the three structures/processes that make blood flow through veins possible.

16.) Please compare and contrast the mechanisms through which oxygen and carbon dioxide are transported in the blood.

17.) What are the functions of the stomach?
18.) Describe the four different layers of the digestive tract wall and their functions.

19.) What is the primary function of capillaries? How do fluids and gases move in and out of capillaries (please describe how the different pressures move these substances across the capillary wall)?

20.) What are the two mechanisms of heartbeat control, and how does each of these mechanisms function?

21.) How does the inflammatory response work? In particular, what are the two primary effects of the inflammatory response?

22.) Please describe T and B cells, including their site(s) of origin and maturation, as well as their functions.

23.) How does inhalation occur? How does exhalation occur?

24.) Please compare and contrast mechanical and chemical digestion.

25.) How does the structure of the small intestine help accomplish its function (= explain the structure of villi and why this structure is great for nutrient absorption)?

26.) What is the role of digestive enzymes? What are some examples of the site of production and site of action for digestive enzymes?

27.) Please explain the three functions of the nephron.

28.) Give an example of one hormone that is involved in urine regulation and describe the effects of that hormone on urine concentration, blood volume, and blood pressure. How does the hormone accomplish these effects?

These questions are tougher… give them a try!

A person may have a severe allergic reaction to something like a bee sting. If this happens to someone who is severely allergic it can result in anaphylactic shock in which the blood pressure plummets, and this can be fatal. The root cause of this is an inappropriate release of histamine in response to the sting. Histamine causes massive vasodilatation, so how does this affect blood pressure?

Sometimes soldiers have to stand in formation for long periods of time without moving an inch. It is possible for someone in this position for an extended period of time to become lightheaded or even pass out due to a drop in blood pressure. What would be a cause of this?

Suppose that your roommate is on a 48-hour fast for food and drink. This means that she has no nutrients or liquids entering her system. What would happen to her blood pressure and why? What hormones would be triggered by the lack of incoming liquids? Explain how these hormones work and what the end result would be concerning her blood pressure and urine volume.